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ABSTRACT

The second enclosure to the study of attrition at the five federal service academies reviews 87 related studies, about half of all those done by, for, or about the academies in the last 10 years. One general observation is that relationships have been established between attrition and student characteristics, whereas the same is not true in studies of attrition and academy environment. It is felt to be possible that some of the dropouts are making an important comment on the academy environment's ability to produce good career officers. Variables that are considered by the 87 studies include: student ability at entry, biographical characteristics, personality characteristics, external effects (such as reference group influences, available alternatives, national events, and societal effects), academy environment, and the academy environment as seen by others. (Editor/MSE)

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ED135287

REPORT TO THE CONGRESS

BY THE COMPTROLLER GENERAL OF THE UNITED STATES

Student Attrition At The Five Federal Service Academies

Departments of Defense,
Commerce, and Transportation

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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ENCLOSURE B

REVIEW OF STUDIES ON ACADEMY ATTRITION AND RELATED ISSUES

HE008640

MARCH 5, 1976

FPCD-76-12B

Contents

		Page
PREFACE		i
CHAPTER		
1	INTRODUCTION	1
	Scope of review	1
	Organization of the review	2
	Student characteristics at entry	5
	Nonacademy factors	6
	Academy environment	6
	Limitations of available studies	7
	Causal attribution	7
	Measurement of an academy environment	8
	Criteria used in reaching conclusions	9
2	RELATION OF ABILITY AT ENTRY TO ATTRITION	11
	Academic ability	11
	Physcial ability	14
	Leadership potential	17
	Overall ability	19
3	RELATION OF BIOGRAPHICAL CHARACTERISTICS TO ATTRITION	21
	Individual background	21
	Prep school attendance	21
	Prior military experience	23
	Participation in Scouting	24
	Race	25
	Family background	27
	Socioeconomic status	27
	Home environment	27
	Birth order	29
	Home geographic region	29
4	RELATION OF PERSONALITY CHARACTERISTICS TO ATTRITION	32
	Personality traits	34
	Findings using the Edwards Personal Preference Schedule	35
	Findings using the California Psychological Inventory	36
	Findings using the Sixteen Personality Factor Test	38

CHAPTER		Page
4	Clinical assessment	40
	Values	42
	Occupational and academic interests	44
	Reasons for attending	47
5	EXTERNAL EFFECTS ON ATTRITION	50
	Individual external effects	50
	Reference group influences	50
	Available alternatives	53
	Impact of national events	55
	Societal effects	56
6	RELATION OF THE ENVIRONMENT TO ATTRITION	57
	Studies of the environment	58
	Air Force Academy studies	58
	First-summer attrition	59
	First-year attrition	
	Upperclass leadership and attrition	61
	Demands on student's time	61
	Transition periods	62
	Military Academy studies	62
	Standardized measures of the environment	62
	Student housing	66
	Reasons for resignation	67
	Coast Guard study	69
	Individual-environment interaction	71
	Accuracy of expectations	72
	Experimental studies	72
	Relation of performance to attrition	74
	Personality-environmental demands congruence	74
7	THE ENVIRONMENT AS SEEN BY OTHERS	78
	The Thayer System	79
	The origins of the Thayer System	79
	Academic system	81
	Military training program	82
	Honor system	82

CHAPTER		Page
8	SUMMARY AND IMPRESSIONS	84
	Limitations of available studies	84
	What we know about attrition	85
	Implications for future research	86
BIBLIOGRAPHY		87
APPENDIX		
I	Detailed abstracts	96

ABBREVIATIONS

ACE	American Council on Education
CCI	College Characteristics Inventory
CPI	California Psychological Inventory
EPPS	Edwards Personal Preference Schedule
MAPS	Military Academy Preparatory School
ROTC	Reserve Officers' Training Corps
RSN	Random Sequence Number
16 PF	Cattell's Sixteen Personality Factor Test
SES	socioeconomic status
SVIB	Strong Vocational Interest Blank
TAG	the Adjutant General

PREFACE

One of the cornerstones of the scientific method of discovering truth is the principle that knowledge is cumulative. This principle holds that the way to new knowledge about something is through a critical examination of the validity of existing knowledge about that thing. Early in our study of student attrition at the Federal service academies we recognized that a great deal of knowledge already existed about why students leave these academies before graduating. We also recognized that this knowledge varied greatly in the methods by which it was obtained and consequently in the degree to which we--and you, the reader--could independently verify its validity.

On the whole, the 87 studies reviewed in this enclosure represent a fund of knowledge the validity of which is the most amenable to verification. They constitute about half of the documents collected by us in response to our request for all studies done by, for, or about the academies in the last 10 years which might add to our knowledge of attrition. They were selected for this enclosure after a detailed review of all documents collected. The principal criterion for selection was that the study must have been directly related to attrition. Use of this criterion screened out a number of studies which may have contained some clues to attrition but whose relationship was not obvious and so would have required broad inferences on our part. Examples of these latter type of studies include college accreditation committee reports, end-of-course critiques by students, and studies of the effect of leadership styles on performance.

We are left with one dominant impression based on the review described here. The impression is that a relatively large number of fairly well done studies have focused on the probability of attrition among students with different characteristics. While these studies have not shown strong relationships between student characteristics and attrition, at least we can place a high degree of confidence in those relationships that have been found. The same is not generally true of studies which have focused on the academy environment. The significance of this uneven quality is that some of those who dropped out may have been saying something important about that environment's ability to produce good career officers. The reader is encouraged to form his or her own impression.

The author-date method of reference citation was used in this enclosure, as well as in Enclosure A. Thus, the surname of the author and year of publication have been

inserted at appropriate points in the text. The full citation can be easily located in the reference list which is arranged alphabetically by surname at the end of the main body of this enclosure. This method was adopted principally because it provides a smooth flowing narrative with useful information at appropriate points, and because it is currently in use by some 87 journals in psychology and education. Where we have quoted extensively from the works of others, the material is set off in block form without indention and the page number in the original publication is shown either in the surname-date citation or at the end of the quoted material.

We have actually had a small role in bringing this report together. Many others over the past years have made it possible for there to be studies on which we could build. Chief among them are (1) the many current and former students who have left at the academies records of their characteristics, thoughts, and observations about the academies, and (2) the many people who routinely collected information contained in these studies or performed the more difficult task of especially designing a study. The process of identifying and collecting the studies was made considerably easier by the staff at each academy.

CHAPTER 1

INTRODUCTION

This is one of three enclosures concerning our study of student attrition at the Federal service academies. Enclosure A provides a detailed, technical account of the methods and procedures, findings and interpretations of our study of academy attrition--involving extensive surveys of more than 20,000 current and former students. Enclosure C provides an extensive tabular description of the characteristics of students of the Class of 1974 who entered and dropped out of the academies. This, the second, enclosure (B) reviews studies of attrition and related issues done by, for, or about the academies in recent years.

In preparing these separate enclosures we were mindful of three things:

--First, there is a good deal of sometimes conflicting and competing evidence on why students leave the Federal service academies before they graduate.

--Second, this evidence is of uneven quality because it has been developed by methods which vary widely in their ability to produce causal results.

--Third, full reporting of the bases of judgments should enable others trained in the same methods to achieve reasonable agreement in interpreting the evidence.

The enclosures were, therefore, prepared to provide the research scientist or interested scholar with the basic evidence from which the summary report on attrition was developed.

SCOPE OF REVIEW

For purposes of this enclosure, approximately 150 "studies" were identified and examined for their relevance to why students leave the academies before they graduate. A liberal definition of "study" was used; as a result, a wide range of documents was examined. This enclosure reviews 87 of those documents selected primarily because they were the most recently completed and the most directly related to attrition. An additional 37 other documents were consulted and are referenced as needed to provide a perspective or framework for evaluation.

A few studies completed prior to 1969 are also included because they were identified by academy officials as still being especially helpful in understanding student attrition;

but, for the most part, only studies completed since 1969 are included. Some studies were not included because their content did not appear immediately relevant to understanding the attrition phenomenon. Among this latter group were (1) studies of why applicants declined appointments, (2) comparisons of academy student characteristics with those of students at other institutions, and (3) tabular presentations of aggregate attrition trends by academy. Nonetheless, the wide range of documents in this review includes

--tables showing the percentage of recruited athletes, students with various levels of ability, scouting participants, and residents (by State) who dropped out;

--a counselor's report of the characteristics of voluntary resignees based on an examination of questionnaire responses, performance records, personal interviews, and official records;

--popular and academic literature on the academy environment, written by participant observers; and

--a questionnaire survey of current students or dropouts on some nonacademy related events or circumstances hypothesized to cause attrition.

ORGANIZATION OF THE REVIEW

The task of integrating such a variety of documents and identifying from them what is known about the causes of student attrition is exceedingly difficult. In part, this difficulty is due to the many different purposes, and subsequent methods, of investigators' studies. It is also due to the varying epistemological perspectives which the study results--and consequently, their contribution to understanding attrition--can be viewed.

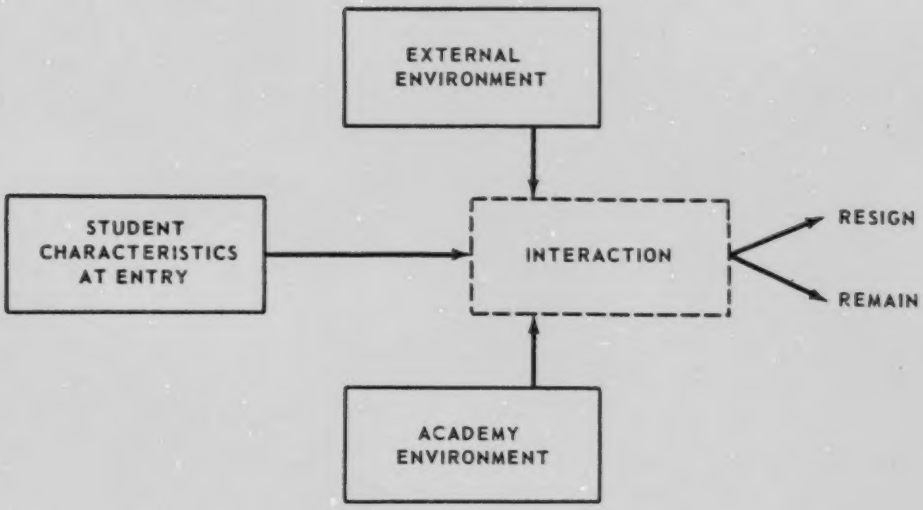
In the remainder of this chapter, a conceptual model is outlined to provide a framework for discussing the studies and associated epistemological issues.

The model is similar to those used by other educational and psychological investigators. As can be seen in figure 1, the model incorporates Lewin's famous dictum (1938) that to understand the causes of a person's behavior, it is necessary to examine how his personality interacts with the environment in which that behavior occurs. The figure also shows that the conceptual model is similar to the strategy recommended by Astin and his colleagues (Astin, 1970) for investigating the types of impacts colleges have on their students.

FIGURE 1

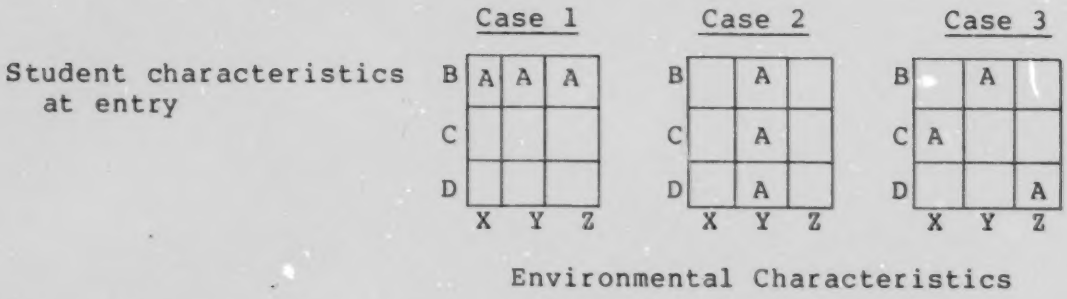
CONCEPTUAL MODEL OF ATTRITION

STUDENT ATTRITION MODEL



The dashed line around the Interaction "term" is intended to show that the three other terms may--in the statistical analysis-of-variance sense--have main effects as well as interaction effects. A main effect would result when a particular characteristic of a student at entry caused his attrition regardless of what he experienced in the academy environment; or, alternately, when an academy experience caused a student to leave regardless of what he was like when he came in. Schematically, the two types of main effects and the interaction effect are exhibited in figure 2, where "A" in a cell represents attrition. In case 1 of the figure, all those who possess characteristic B at entry drop out no matter what they experience in the environment. In case 2, all those who experience environmental characteristic Y drop out regardless of what they were like at entry. Finally, in case 3, those with characteristic B at entry will drop out only if they experience Y in the environment, and only the joint combination of C and X or D and Z leads to attrition.

FIGURE 2 (note a)



a/Schemata for main and interaction effects on attrition (after Kelley, 1972).

It is relatively simple--in the narrow statistical sense--to imagine a main effect due to a student characteristic at entry, but not so simple to imagine main effects due to the academy environment or external factors. In terms of student characteristics, for instance, if it was found that those with a certain (low) level of academic ability drop out regardless of which academy they attend, it might seem natural to attribute causality to academic ability. However, even in this pure and simple instance, the proper context for understanding attrition is not the main effect, but the interaction of the low academic ability with an academy environment that is demanding in terms of academic requirements and the amount of time available to satisfy those requirements. Such a contention is even more justified where the relationship between aspects of the main terms--student characteristics, academy environment, nonacademy factors--and attrition is far from perfect. In this respect, Feldman and Newcomb (1969), after reviewing 40 years of research concerned with the impact of colleges on their students, concluded that the only way to understand the phenomenon of dropping out was to view it as a lack of fit between the needs, desires, values, aspirations, and abilities of the student, and the perceived opportunities and requirements in the college environment related to these characteristics.

Despite the logic of the interactional viewpoint, our review is organized around the three separate main terms of the conceptual model because, with few exceptions, the studies we identified addressed only a main term. The following sections of this chapter sketch the organization of the review and describe the nature of the studies included in each section. This chapter concludes with a general comment on limitations of the available studies on why students leave an academy before graduating, and with a brief statement of the criteria we used in reaching conclusions from those studies.

Student characteristics at entry

By far the largest number of studies identified--about 80 percent--were concerned with characteristics of the student when he enters an academy. Studies of this topic have generally been done:

--to validate current selection procedures which are based on measures of an applicant's ability,

--to explore the utility of new selection procedures based on nonability measures, or

--to investigate aspects of the student's personality related to attrition.

The results of the selection research are reviewed in chapters 2 and 3, while the personality studies are reviewed in chapter 4.

In these three chapters, there appears to be an implicit, subtle, and often unrecognized assumption common to the studies whose importance (particularly when reviewing the studies in chapter 2) should be noted. Put simply, the assumption is that those who stay and graduate from an academy are the ones the academy wants to stay; while, conversely, those who leave are the ones the academy does not want to retain. While this assumption is not true according to at least one former superintendent, 1/ none of the studies we reviewed on student characteristics at entry explicitly addressed the characteristics of "less desirable" retainees or "more desirable" dropouts. The practical result of this is to gradually make those students who enter more like those who graduate.

Despite the fact that a number of these studies were done only for specific, administrative purposes, it should also be noted that their contribution to understanding the causes of attrition is limited not only by their one-dimensional view of the phenomenon--that is, whether or not the main effect is significant--but also because the criterion is confounded.

1/Lt. Gen. A. B. Clark, USAF (Ret.), in a meeting of the Comptroller General's Advisory Panel on the Management and Administration of the Federal Service Academies at the U.S. Air Force Academy, Colorado, in April 1974, stated that 20 percent of voluntary separations were good cadets and potentially good officers.

A large number of these studies attempted to separately predict academic dismissal, voluntary resignation, disciplinary dismissals, and so on, in these groups. The problem with this is that some who are about to fail, resign voluntarily, while some who want to avoid the stigma of resigning, fail purposely, and so on.

Nonacademy factors

The fewest number of studies we identified were concerned with the relationship between attrition and nonacademy personal or societal influences. In fact, this topic was addressed specifically in only three studies. However, in chapter 5--where we discuss the studies on nonacademy factors--we have included findings from other studies which addressed this topic as an ancillary issue.

Assessment of the impact of nonacademy events and influences--both personal and societal--might seem to be ideally suited to an unobtrusive, repeated-measurements design involving comparison of turnover trends (that is, annual attrition) at an academy and among academies. We reviewed two such "studies," but did not include them in chapter 5. The first used 5 years of turnover data from one academy to assess the impact of the change from a 4- to a 5-year service obligation after graduation. The first part of this two-page narrative report states one conclusion, the second part, a contradictory conclusion. From our examination of the data, no conclusion can be drawn. The second report examines 4 years of data, again from a single academy, assessing the impact of initiating a 2-year enlisted service obligation for those who drop out during their last 2 years. Again we believe no conclusions can be drawn.

The difficulties of interpreting time-series analysis are considerable. Even if a movement in a time series occurs at an appropriate time in relation to the event believed to cause attrition, a number of other points must be examined to rule out competing hypotheses about causes of the movement--and these could be many, thus requiring examination of a very long series.

Academy environment

From studies of the academy environment reviewed in chapters 6 and 7 we learn very little, in any scientific sense, about the causes of attrition. The single exception is that attempts by at least one academy to provide selected applicants with accurate information were associated with a reduction in attrition among those applicants. These studies were so designed that a causal relationship between accuracy

of expectations and rate of attrition can be inferred with a high degree of confidence.

Because studies of the academy environment are sparse and, with few exceptions, are of an hypothesis-generating type rather than hypothesis-testing (causal) type, we have included a number of participant observation studies in this section of the review. These studies are discussed in chapter 7, while studies done by the academies are discussed in chapter 6.

LIMITATIONS OF AVAILABLE STUDIES

Before presenting the details of the various studies, we must emphasize that the vast majority of them were done to answer specific questions--for instance, are the current applicant selection cutoffs valid, or did the change to a lottery military draft system affect attrition. The more general question we are addressing in our study--why do students leave the academies before graduating--requires that certain standards of research be met if unambiguous results are to be obtained. Few of the studies we reviewed meet those standards which relate to causal attribution and to measurement of an academy environment. Despite this fact, we believe those standards are worth discussing so that appropriate cautions might be exercised when interpreting the results presented in this enclosure.

Causal attribution

In observing a situation each of us has certain unique preconceptions, expectations, and values which are conditioned by previous experiences; these affect how we view that situation. If, in addition, the situation happens to be a social interaction in which we have an active part, what we see may also be a function of the hypotheses others in that interaction hold about the effect of their behavior on us. Because of this, behavioral and social scientists have developed a set of standards which, when applied to the viewing of a situation, are intended to result in universally accepted interpretations of its meaning.

In the behavioral sciences, these standards are incorporated in the notion of a "true experiment" (see Campbell and Stanley, 1963; Cook and Campbell, n.d.) which, in practice, is often translated into a requirement for random assignment of individuals to specific treatment conditions. In terms of the academies' research efforts to understand attrition, this requirement would seem to have several implications. First, the overall impact of an academy environment on attrition cannot be understood unless one can randomly

assign academy applicants to each of the academies and perhaps to appropriate control groups. The best one can hope for is random assignment to planned variations in specific aspects of the academy program (as was done with assessing the benefits of more accurate recruiting information, discussed in chapter 6).

A second implication of the requirement for random assignment to specific treatments is that exit interviews, of themselves, are not likely to lead to a better understanding of attrition. It is at least conceivable, if not possible, that current students experiencing the same environment would respond to exit interviews in the same way as the dropouts. Or their responses might be different from the dropouts because they experienced different aspects of the environment.

The third implication is similar to the second: continued analysis of admissions data and other student characteristics at entry itself is not likely to lead to a better understanding of attrition. Unless we know the specific "treatments" received by students with specific characteristics, we can hardly attribute causation to those characteristics.

In the social sciences, where "true" experimental research is much more difficult to accomplish, there has recently been considerable clarification of the conceptual and mathematical issues related to causal inferences from quasi-experimental research (see Blalock, 1964; 1971). These clarifications suggest that it is possible to test causal hypotheses with appropriate mathematical models, provided that certain assumptions can be made about the effect of unmeasured variables in the model. The importance of these clarifications for our study objective is that a considerable reduction in the number of unmeasured variables must be achieved before appropriate causal inferences are possible. We reviewed--and discuss in chapter 6--one study which makes use of these social science concepts.

Measurement of an academy environment

Not only do student characteristics at entry constitute the most frequently studied topic in relation to attrition, but also substantially more confidence can be placed in the interpretation of the results of these studies than in the interpretation of the few academy environment studies. There are several reasons for this. One is the considerably more developed state of the art in measuring individual, as opposed to environmental, characteristics.

The College Board Scholastic Aptitude Test used by each of the academies to measure an applicant's mathematical and verbal ability--discussed in chapter 2--has been taken by literally millions of college applicants since it was first administered almost half a century ago. The Test has been restandardized a number of times, and provides clearly interpretable scores which have proven useful in predicting an individual's college performance. The same is true of the vocational interests tests--discussed in chapter 4--used by the academies. On the other hand, the only standardized measure of an environment used in any study we identified--the College Characteristics Inventory (CCI) and one of its variants discussed in chapter 6--was first administered in 1957 and has been answered by an estimated 100,000 students. More importantly, though, the CCI and many other currently available environmental measuring instruments (Moos, 1973) provide average descriptions of an environment which are difficult to integrate analytically into a test of the effect of the environment on its inhabitants unless a sufficiently large number of diverse environments are studied simultaneously.

A second reason for the relatively more sophisticated studies of the relation between attrition and student characteristics is their sources. The vast majority of student characteristics studies were done by staff groups at the Military Academy and the Air Force Academy manned by personnel trained to do social science research and charged with the responsibility of investigating factors related to attrition. Environmental studies, on the other hand, were generally done by line officers--not trained in the social sciences--or others whose interest in building a fund of knowledge about causes of attrition was incidental to their primary responsibility.

CRITERIA USED IN REACHING CONCLUSIONS

One of the criteria used in reaching conclusions about the causes of attrition from the studies we reviewed has already been implicitly stated. We agree with Cook and Campbell (n.d.) that there is no substitute for assessing internal validity when evaluating research concerned with causal relationships. However, many of the studies we reviewed were not designed to test such relationships. Therefore, we have relied as heavily--if not more--on an assessment of external validity in reaching our conclusions. To the extent that a common finding emerged from studies at different academies, on different classes, and even using different conceptual approaches and measuring instruments, we placed more confidence in the validity of that finding.

The reader who wants to reach his own conclusions can find more information on the studies in the detailed abstracts contained in appendix I and by using the bibliography.

CHAPTER 2

RELATION OF ABILITY AT ENTRY TO ATTRITION

When a student enters an academy he possesses a certain level of academic and physical ability and leadership potential which will help determine his success at the academy. Most of the studies relating these characteristics to attrition have been done by the Military Academy and the Air Force Academy; a few have been done by the Naval Academy, and one each was done for the other two academies. Those studies consistently show that students who enter with high academic ability tend to stay longer and perform better academically. Studies of physical ability have produced much less consistent results. Leadership potential has been found to be related to certain types of attrition. Combining the measures of specific abilities into an overall measure of ability provides the best predictor of who will leave an academy. However, with rare exception, none of these characteristics has been found to be related to voluntary resignation due to lack of motivation.

Details of these studies are presented in the following sections.

ACADEMIC ABILITY

At each of the academies a student's academic ability at the time he enters is measured by a combination of standarized, national tests of verbal and quantitative achievement and aptitude, as well as by his academic rank in high school. The aptitude measures reflect a student's potential ability; whereas the achievement measures reflect his current level of performance. High school rank takes account not only of a student's rank in his graduating class, but also the size of that class.

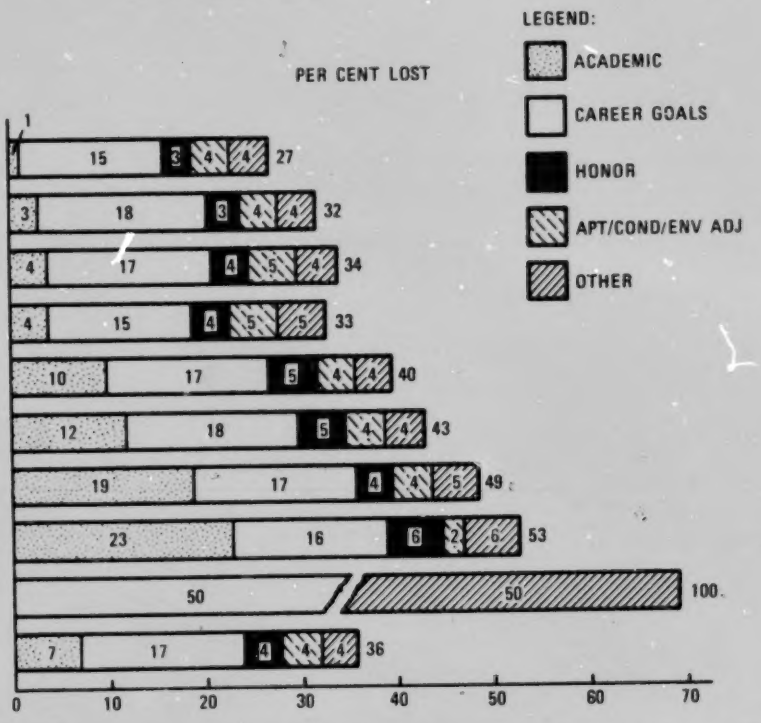
Five separate studies of Military Academy classes entering in 1966 and 1968-71 found that low academic ability was related to overall attrition (Piccolino, 1967; McLaughlin, 1971a; Marron, 1970; Houston, 1973; Butler and Houston, 1974). As shown in table 1, attrition data from six Air Force Academy classes, entering between 1964 and 1969, show the same thing. table 1 also shows another finding common to studies of academic ability and attrition: that is, overall academic ability is related to total attrition through its impact on academic attrition, but is not related to any other kind of attrition. For instance, 16 percent of those in the next to the lowest academic ability range--composite score of 2600-2699, table 1--leave because of what the Academy terms a

TABLE 1

ATTRITION BY ACADEMIC COMPOSITE SCORE

USAF ACADEMY CLASSES OF 1968-1973
AS OF 30 JUNE 1973

ACADEMIC COMPOSITE*	NUMBER ENTERED	NUMBER LOST
3300-UP	1373	377
3200-3299	832	269
3100-3199	934	320
3000-3099	983	324
2900-2999	999	394
2800-2899	831	358
2700-2799	595	293
2600-2699	214	115
BELOW 2600	2	2
TOTAL	6763	2452



*TOTAL OF SCORES ON ACHIEVEMENT AND APTITUDE TESTS PLUS PRIOR ACADEMIC RECORD
SOURCE: Weston, 1973a

change in career goals, while 18 percent of those in the next to highest ability range leave for the same reason.

Data we collected at the Merchant Marine Academy shows the same relationship between overall attrition and academic ability as measured separately by high school class rank and by mathematical and verbal ability scores. It is interesting to note that the Academy has had to lower the minimum qualifying ability scores in recent years from a four-test total score of 2000 points (the national average in academic year 1969-1970) to 1800 points. The result--as indicated in table 2--is a slight, but statistically significant tendency for those below the earlier minimum score to leave more often than those above that mimimum.

In a study done for the Coast Guard Academy--to be described more fully in chapter 4--it was found that selection of various levels of academic ability measures by a statistical

TABLE 2

ATTRITION BY COLLEGE BOARD "QUALIFYING" SCORE
USMMA CLASS OF 1974

Score range	Number retained	Number lost	Total entered
1800-2000	44	58	102
Over 2000	141	113	254
Total	185	171	356

$X^2=9.6926, p<.01$

$r_{phi}=.16$

technique known as a "regression estimate of event probabilities" leads to statistically valid predictions of attrition in the classes of 1968 through 1971 on which the estimating equations were based (Enger, Mednick, and Fisher, 1972). As often happens, though, with regression estimates which capitalize on chance as well as valid variance, application of the estimating equation to a new class leads to nonsignificant predictions. Moreover, the results were achieved with a technique so esoteric as to render impossible their interpretation.

As with overall academic ability, the individual achievement and aptitude scores are related to attrition for academic reason; but, unlike overall ability, are not related to total attrition. Mathematical ability is more strongly related to academic attrition than is verbal ability, as is illustrated in table 3 which shows the average ability scores of the Naval Academy Class of 1968 and those who had left the Academy by November 1966.

TABLE 3

AVERAGE VERBAL AND MATHEMATICAL ABILITY SCORES BY STATUS
USNA CLASS OF 1968

Student status	Verbal ability	Mathematical ability
Voluntary resignees	1191	1312
Academic discharges	1169	1246
Class average	1179	1311

Source: Shields, 1966.

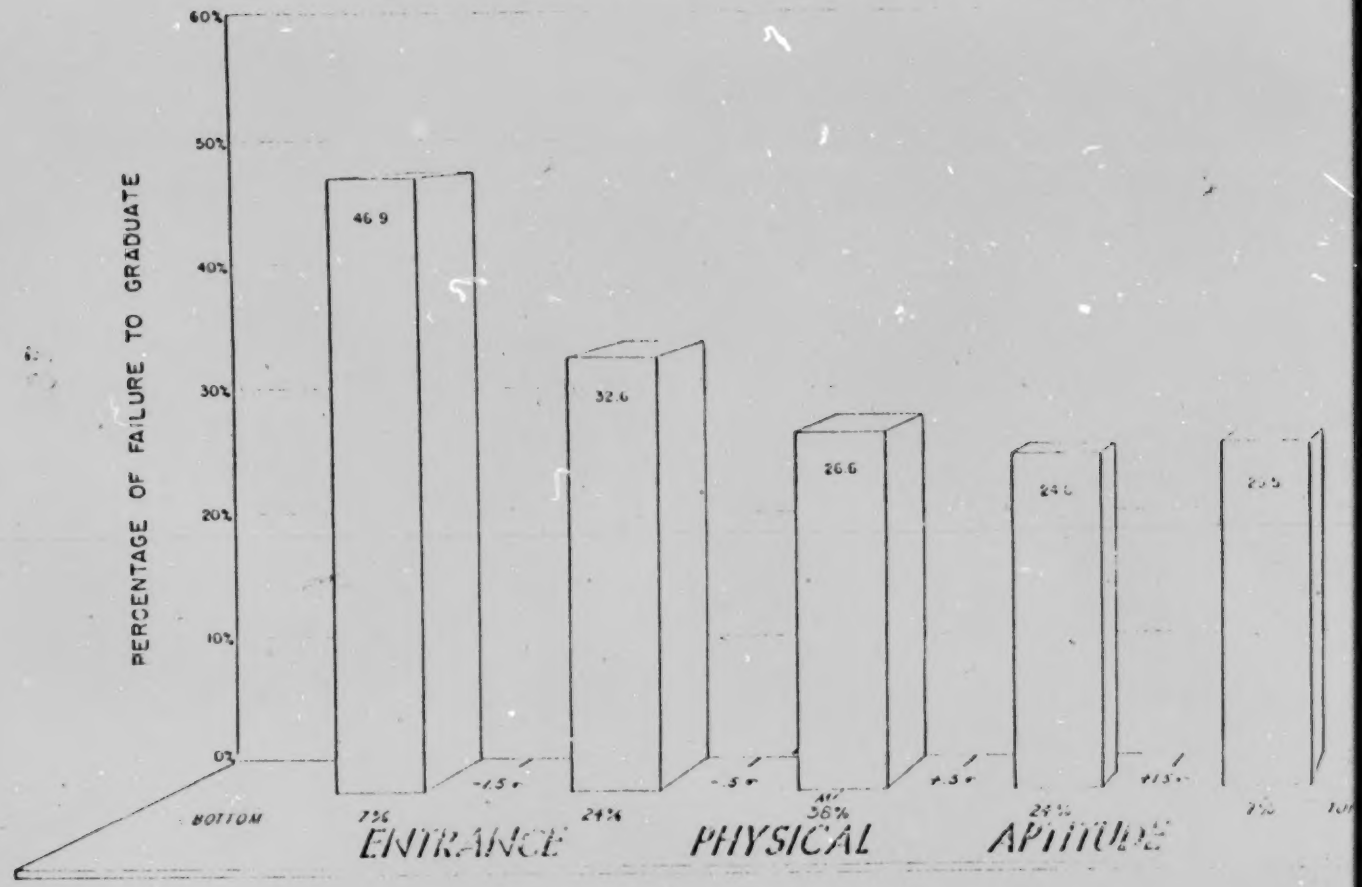
High school rank--a measure not only of a student's academic aptitude at entry but also of his past level of achievement--has been found to be related to academic attrition in two Military Academy classes and to dismissals for honor violations in one of them, but was not related to motivational attrition in either one (Houston, 1973; Butler and Houston, 1974). On the other hand, voluntary resignees from the Naval Academy Class of 1975 by the beginning of their third year had, as a group, a significantly lower average high school class rank (Mann, 1973). An earlier study of the Naval Academy Class of 1970 (Howland, 1971a) found that high school rank was the best predictor--of seven ability measures examined--of final Academy class standing and cumulative grade point average, but the study did not find rank to be a good predictor of motivational attrition.

PHYSICAL ABILITY

Recently each of the military academies has been administering a physical aptitude examination to applicants designed to measure their coordination, strength, endurance, speed, and agility. Results of studies on the relationship between scores on this examination and attrition have been inconsistent except for the finding that physical ability is not related to attrition for motivation reasons. The lack of consistency may be due to unique circumstances associated with the various classes studied.

At the Military Academy, several earlier studies found that cadets with physical aptitude scores 1.50 standard deviations below their class mean had a slightly higher attrition rate. The data from one of these studies are summarized in chart 1 on the next page. More recent studies, however, have found less consistent results than those shown in chart 1. In one recent study, those with higher physical ability scores in the Class of 1974 were less likely to be discharged for aptitude, conduct, and physical education reasons (Houston, 1973). This finding was not replicated when the Class of 1975 was studied (Butler and Houston, 1974). In neither class was physical ability related to motivational losses. McLaughlin (1971a) has reported some evidence that cadets in the Class of 1972 with higher physical ability scores are less likely to remain at the Academy than those with low scores. Piccolino (1967) similarly found that in the Class of 1970, cadets in the middle range of ability were more likely to stay than those at the low or high range. However, Marron (1971d) found that those students in the Class of 1968 with high physical ability scores were less likely to resign for any reason.

THE RELATIONSHIP BETWEEN PHYSICAL APTITUDE AND FAILURE TO GRADUATE FROM USMA
(CADET CLASSES OF 1951 - 1965 COMBINED N - 11,057)



Source: Sloane, 1970:47.

THE RELATIONSHIP BETWEEN PHYSICAL APTITUDE AND FAILURE TO GRADUATE FROM U S M A

(CADET CLASSES OF 1951 - 1965 COMBINED N - 11,057)

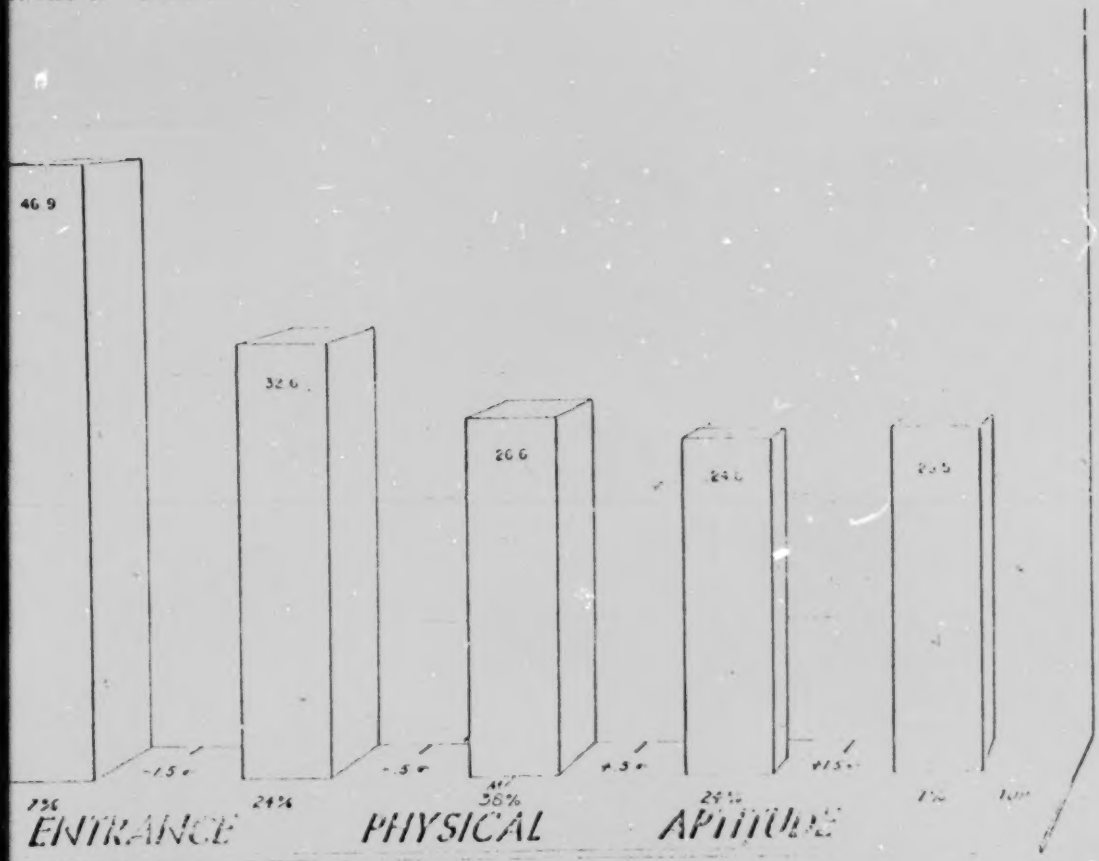


CHART 1

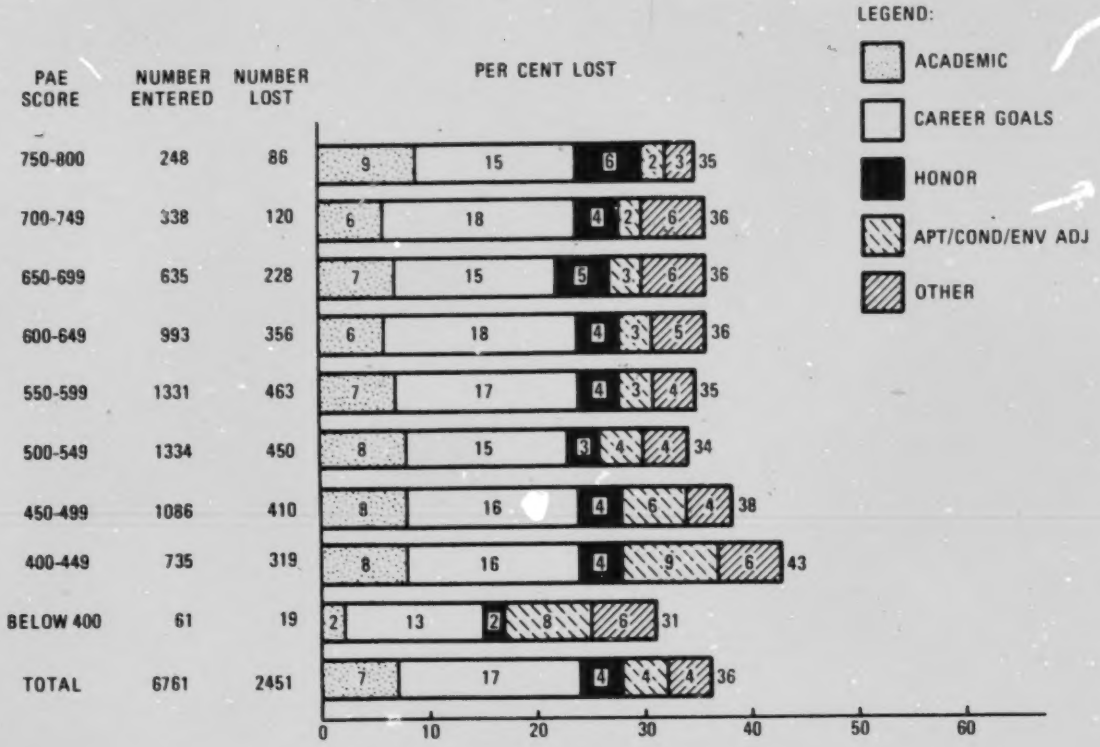
70:47.

At the Air Force Academy, there does not appear to be any relation between physical ability and overall attrition from the graduating classes of 1968 through 1973--as indicated by table 4--but there is a very consistent and definite tendency for students lost for what the Academy terms "aptitude/conduct/environmental adjustment" reasons to have lower physical ability. In addition, our analysis shows those members of the classes of 1971 through 1975 who received physical ability waivers did not leave at a significantly greater rate than their classmates. The attrition rate for the group with waivers was 34 percent and for their classmates it was 29 percent (Haeger, 1971)--the chi-square statistic for the difference was 0.600, which is not significant.

TABLE 4

ATTRITION BY PHYSICAL APTITUDE EXAMINATION SCORE

USAF ACADEMY CLASSES OF 1968-1973
AS OF 30 JUNE 1973



SOURCE: Westen, 1973

LEADERSHIP POTENTIAL

Leadership potential at entry is indexed by a composite of scores assigned to measure a student's leadership in extracurricular high school activities, both athletic and nonathletic. The composite score has been found to be related to several types of attrition.

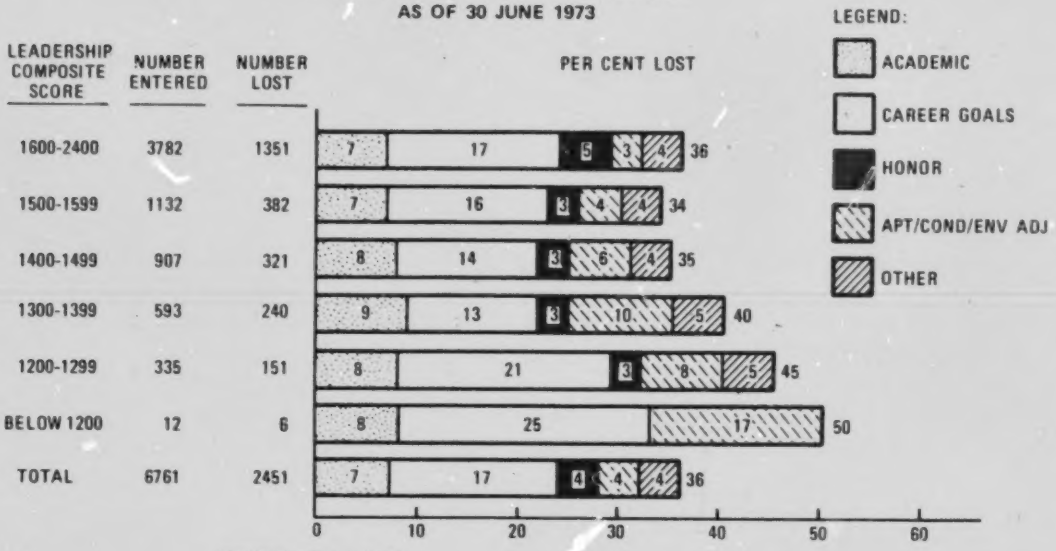
Two studies of separate Military Academy classes (Houston, 1973; Butler and Houston, 1974) found that those students with high leadership potential scores are less likely to be aptitude, conduct, and physical education losses. Neither study found a relationship between leadership potential scores and overall attrition; nor did either study find the scores to be related to motivational attrition. Attrition figures for six Air Force Academy classes tend to support the above findings about overall losses as well as losses for aptitude, conduct, and environmental adjustment reasons. However, the figures also indicate a slight, but statistically significant, tendency for both low and high leadership potential scores to be associated with higher motivational attrition--see table 5, career goal losses. The Chi square for this relationship is 14.8573 and with 5 df gives $p < .02$. The strength of the relationship ($C = .052$) is weak, however.

TABLE 5

ATTRITION BY LEADERSHIP COMPOSITE SCORE

USAF ACADEMY CLASSES OF 1968-1973

AS OF 30 JUNE 1973



SOURCE: Westen; 1973

A somewhat different relationship between leadership potential ranking and motivational attrition was found near the end of the first semester for the Air Force Academy Class of 1967 (Thompson, 1964). In that class, 15 percent of those in the top quartile of leadership potential resigned for motivational reasons, while 27 percent of those in each of the next two quartiles resigned, and 31 percent in the bottom quartile resigned for motivational reasons.

As mentioned previously, the composite leadership potential index is made up of separate scores for high school athletic participation and nonathletic extracurricular activities. Since between 70 to 80 percent of the classes at the military academies won letters for high school athletic activities and about one-fourth received all-conference or all-State recognition, it would seem obvious that participation, or nonparticipation, in high school athletic activities might be an important factor in any academy attrition study. Several of the studies reviewed suggest that the relation it has to attrition may, in fact, be curvilinear: that is, attrition may be higher for those groups who participate a little or a lot in high school athletics and lower for the group who participated a moderate amount.

Marron (1971c) successfully used level of participation in high school varsity and nonvarsity sports as a moderator in predicting attrition from the Military Academy Class of 1972. His study showed that those who participated in many or in few varsity and nonvarsity sports were more likely to leave the Academy than their classmates who participated moderately in sports. Marron interprets these results in terms of deviance from group norms, suggesting that cadets who are very much different from their classmates at either extreme are likely to be subject to strong group pressures or even rejection. He further points out that:

> What is of particular interest here is that the norms may be exceeded by individuals whom the administration see as desirable to retain; i.e., the norms of the cadets may not be in agreement with the norms of the administrations. (p. 3)

We found results similar to Marron's in an analysis we performed of raw data showing the percentage of Air Force Academy cadets leaving the classes of 1973 through 1976 with various levels of athletic activities scores. As can be seen in table 6, those with either high or low scores were more likely to leave than those with moderate scores.

TABLE 6

ATTRITION BY ATHLETIC ACTIVITY INDEX LEVEL
USAF ACADEMY CLASSES OF 1973-76
AS OF JUNE 1973

Score level	Leavers	Stayers	Total
Top third	291 (42%)	395	686
Middle third	1060 (36%)	1882	2942
Bottom third	816 (39%)	1288	2104
Total	2167 (38%)	3565	5732

$X^2=11.012$, $p<0.005$ C=.044

The second component of the leadership potential index is a score assigned on the basis of the extent of participation and leadership in high school nonathletic activities. Data on the number of students participating in such activities is extensive, but analysis of the data in terms of attrition is rare. In fact, we found only one analysis--a table showing the percentage of Air Force Academy cadets at each level of a nonathletic activities score who left the Academy (Westen, 1973). The table showed no relation.

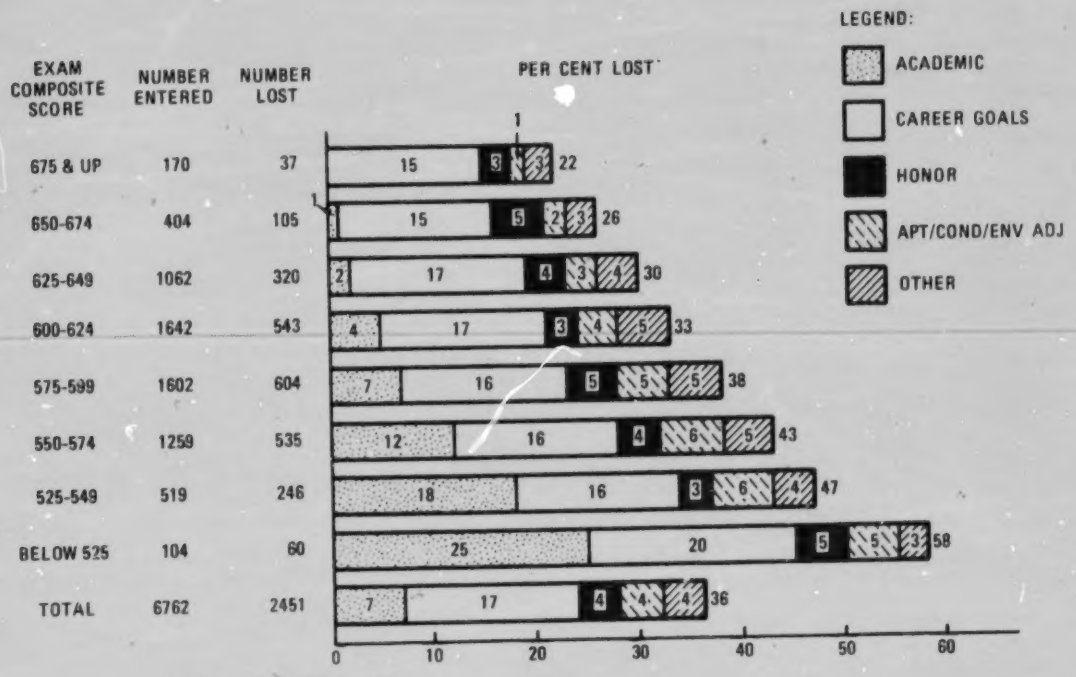
OVERALL ABILITY

Each of the academies combines the individual measures of ability into a weighted linear composite measuring overall ability. In studies of the classes of 1974 and 1975 at the Military Academy (Houston, 1973; Butler and Houston, 1974), low scores on this composite measure were found to be related to overall attrition and to attrition due to academic failure and aptitude, conduct, and physical education reasons. Data from the six Air Force Academy classes referred to earlier--as can be seen in table 7--also show that low composite scores are related to overall attrition and specifically related to attrition for academic reasons and to aptitude/conduct/environmental adjustment reasons.

TABLE 7

ATTRITION BY EXAM COMPOSITE SCORE

USAF ACADEMY CLASSES OF 1968-1973
AS OF 30 JUNE 1973



SOURCE: Westen, 1973

Although none of the three studies just mentioned found any significant relation between overall ability and motivational attrition, an earlier study of the Class of 1967 at the Air Force Academy did find such a relationship (Thompson, 1964). Near the end of their first semester, only 11 percent of those who scored in the top quarter of that class on the overall ability composite had left for motivational reasons, whereas 33 percent of those scoring in the bottom quarter had left.

CHAPTER 3

RELATION OF BIOGRAPHICAL CHARACTERISTICS TO ATTRITION

In addition to the abilities a student brings with him to an academy, he also has certain biographical characteristics which may help determine his success at an academy. These characteristics are factors on which selection of applicants is not explicitly made but which do contribute to the total personality of the student. The academies have done a number of studies to find out what, if any, relationships exist between biographical characteristics and attrition. A few such relationships were found.

Academy studies of biographical characteristics can be divided into two types: those which focus on the background of the individual and those which focus on his family background. Individual characteristics will be discussed in the first part of this chapter; family characteristics will be discussed in the second part.

INDIVIDUAL BACKGROUND

Among the individual background characteristics investigated in academy studies are (1) academy prep school attendance, (2) previous military experience, (3) Scouting participation, and (4) race. Many of these studies were done either to determine whether or not different selection procedures would reduce attrition in groups possessing common characteristics or to determine whether the addition of nonability measures to the selection battery would reduce attrition.

Prep school attendance

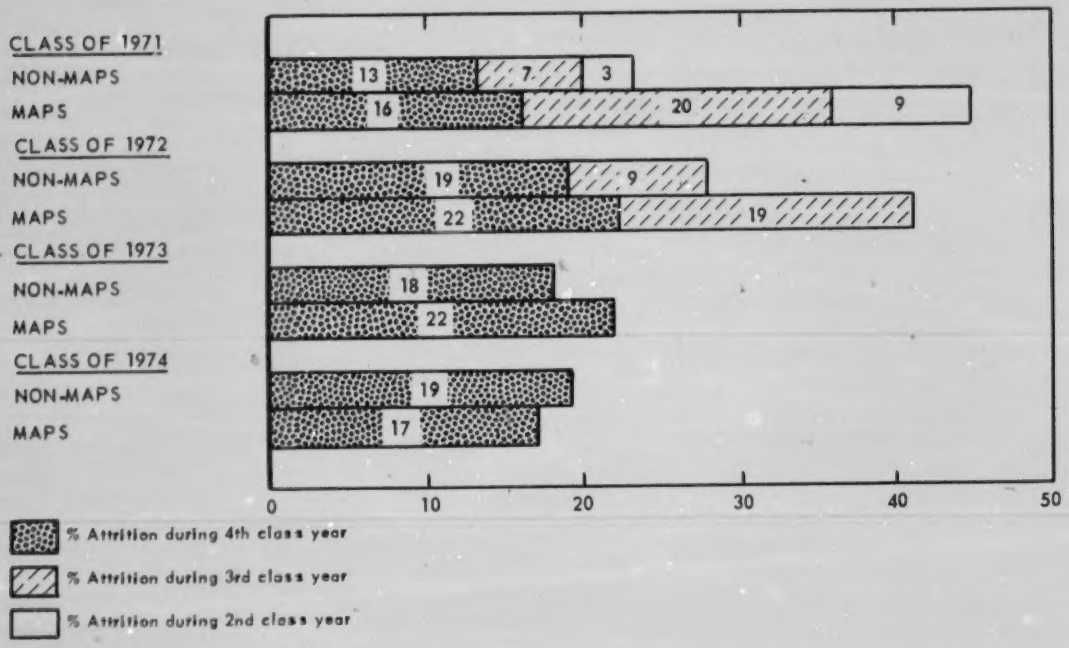
Studies of the relationship between attendance at an academy-sponsored prep school and attrition suggest that the effect of prep school attendance on the probability of leaving before graduation is moderated by when the attrition occurs. No consistent relationships were found for early attrition--that which occurs from the middle through the end of the first year--in studies done at two academies on different entering classes. However, studies of three classes at the Military Academy show that the probability of attrition by prep school graduates after the first year is much higher than it is for nongraduates.

In an early study at the Air Force Academy, Thompson (1964) found that through December of their first year, only 5 percent of the Class of 1967 who had attended the

academy prep school had left because of lack of motivation, while 13 percent of those who had attended only high school had left for the same reason. The percentages entering in that Class who had attended prep school and high school only were 18 and 62, respectively. On the other hand, Morgovsky (1971) has published data--presented in chart 2--on the classes of 1971 through 1974 at the Military Academy which show small differences in first-year attrition rates between prep school graduates and those who did not attend prep school. Morgovsky's data on the classes of 1971 and 1972 also show that attrition among prep school graduates increases substantially after the first year in relation to that of nongraduates. Butler and Houston (1974) present data for the Class of 1972 at the Military Academy which shows that by the beginning of their second-class (third) year almost 48 percent of the prep school graduates have left the Academy.

CHART 2

ATTRITION OF U.S. MILITARY ACADEMY PREP SCHOOL (MAPS) GRADUATES VERSUS OTHERS
U.S. MILITARY ACADEMY CLASSES OF 1971–1974
AS OF FEBRUARY 28, 1971



There are a number of possible explanations for the relation between prep school attendance and attrition. For instance, in a survey of ex-cadets of the Class of 1971 (Medsger, 1971a), prep school graduates ranked "expiration of time in service" as the second most important reason for leaving. However, only 15 prep school graduates responded to the survey, so the external validity of this finding is questionable. Another possible explanation is that the prep school graduates are not as academically able as non-graduates. Although Morgovsky (1971) reports data showing that military prep school graduates score higher than non-graduates on standardized measures of academic ability used in selection, he also reports data showing that their academic average at the academy is, in every class he surveyed, lower than nongraduates. Their composite admissions scores--a measure of overall ability at entry--are also lower, due to a lower rank in their high school class and lower leadership potential scores.

Prior military experience

A number of studies examined the relationship between prior military experience and attrition; however, all were done at the Military Academy. No relationship was found in two of the studies. In his analysis of the characteristic of persistors and resignees of the Class of 1972, at the end of the first year, McLaughlin (1971b) found no differences in

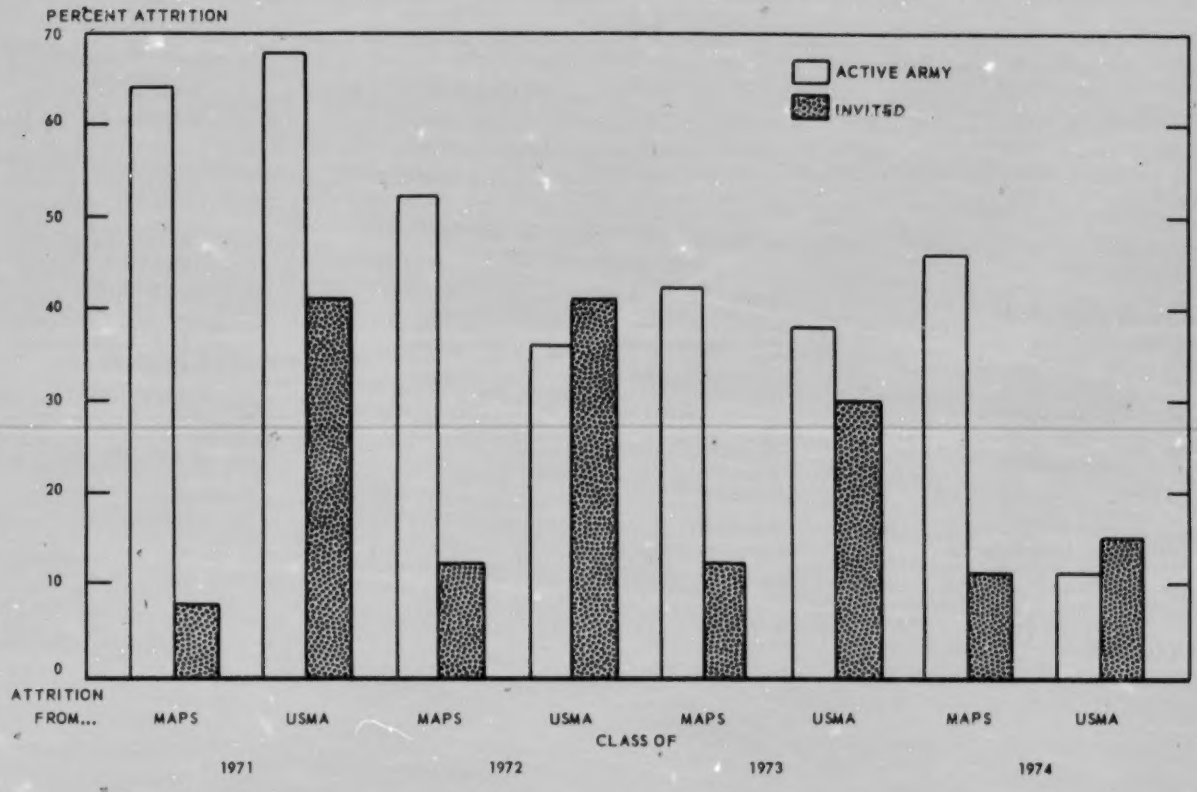
--high school ROTC participation,
--rank in high school ROTC,
--college ROTC participation,
--military summer camp attendance,
--Army component,
--number of decorations and speciality badges, and
--boot training.

Similarly, Macedonia (1969) found that those who had voluntarily resigned from the Class of 1971 by the end of their first year did not differ from those who stayed in terms of high school ROTC participation or prior military experience.

On the other hand, several studies have shown that those who entered the Military Academy Prep School by way of active service had substantially higher rates of attrition than those who were invited to enter by the Adjutant General than their other classmates who did not enter the prep school (Wise, 1968; Butler, in process). The most recent report (Butler, in process), in fact, shows that the group who entered the prep school from the Active Army not only had a higher rate of attrition at the Academy than the group invited to attend the prep school, but also had a higher rate of attrition while at the prep school--see table 8.

TABLE 8

ATTRITION OF ACTIVE ARMY AND INVITED PREP SCHOOL ATTENDEES FROM MAPS AND USMA



The data for table 8 was collected in the spring of 1975 and show the same low level of first-year attrition (Class of 1974) as displayed in the immediately preceding table.

Participation in Scouting

About one-half of all classes entering the military academies in recent years have participated in some form of Scouting, while a little less than 10 percent have been Eagle Scouts. Studies of the relation between Scouting participation and attrition have produced inconsistent results at the Military Academy, but data from the Air Force Academy shows that a student's prior participation increases his chance of being in the group which graduates.

At the Military Academy, Macedonia (1969) found no significant difference in the number of voluntary resignations of Scouts and non-Scouts by the end of the first year for the Class of 1971. McLaughlin (1971b), however, found

that those members of the Class of 1972 who resigned during their first year tended to have participated less in Scouting and they had held lower rank and positions than their classmates. We performed chi-square tests of the differences in attrition rates among Eagle Scouts, other Scouts, and non-Scouts of the Air Force Academy classes of 1959 through 1977--see table 9--and found Eagle Scouts much less likely to leave before graduation ($X^2=48.04$, $p<0.001$) than their classmates; we also found other Scouts also significantly less likely to leave than their classmates ($X^2=51.56$, $p<0.001$).

TABLE 9
ATTRITION BY LEVEL OF SCOUTING ACTIVITIES
USAF ACADEMY CLASSES OF 1959-77
AS OF OCTOBER 31, 1973

Scouting level	Leavers	Stayers	Total	Percent attrition
Eagle Scouts	601	1,499	2,100	28.6
Other Scouts	2,595	5,099	7,694	33.7
Non-Scouts	2,965	5,113	8,078	36.7
Total	6,161	11,711	17,872	34.5

Source: Westen, 1974.

Race

Data on the relationship between race and attrition developed by the Military Academy and the Air Force Academy show that minority group members are no more likely to leave before graduation than their classmates. Butler and Houston (1974b) have presented data showing that 36 percent of the entering Class of 1975 had left within 2 years, while 30 percent of all minorities--and 32 percent of the blacks--had left by that time. We analyzed attrition rates for blacks, Orientals, Spanish-speaking Americans, and American Indians and their classmates who entered the Air Force Academy between 1955 and 1973. The results of that analysis--presented in table 10--show no significant differences in attrition rates between the various minority groups and their classmates.

TABLE 10
ATTRITION BY MINORITY GROUP STATUS
USAF ACADEMY CLASSES OF 1959-77
AS OF JANUARY 1974

Status	Leavers	Stayers	Total
Black Americans			
Black	81 (31%)	177	258
Non-Black	6,145 (35%)	11,471	17,616
Total	6,226 (35%)	11,648	17,874
		X^2 = 1.402, n.s.	
Oriental Americans			
Oriental	34 (29%)	82	116
Non-Oriental	6,192 (35%)	11,566	17,758
Total	6,226 (35%)	11,648	17,874
		X^2 = 1.383, n.s.	
Spanish-Speaking Americans			
Spanish-speaking	32 (33%)	66	98
Other	6,194 (35%)	11,582	17,776
Total	6,226 (35%)	11,648	17,874
		X^2 = 0.182, n.s.	
American Indians			
Indian	18 (39%)	28	46
Non-Indian	6,208 (35%)	11,620	17,828
Total	6,226 (35%)	11,648	17,874
		X^2 = 0.384, n.s.	

FAMILY BACKGROUND

A few studies have examined the relationship between a student's family background and his performance at the Academy or the probability of his leaving. The factors examined included the parents' socioeconomic status, the student's home environment, the student's birth order, and the geographic location of and distance from the Academy to the parents' home. Because of the small number of studies the results are often inconclusive. Details of the studies follow.

Socioeconomic status

Only four studies were identified which were concerned with parental socioeconomic status (SES). None of them examined the differences in SES between those who stay and those who leave. Two of them did, though, examine the relationship between SES and type of attrition. These findings were consistent.

Houston (1970) found that the parents of Military Academy cadets of the Class of 1973 generally had more education and a higher income than did parents of civilian college students. He did not examine the relationship of these variables to attrition. In his survey of ex-cadets of the Class of 1971, Medsger (1971a) found that parents of non-voluntary leavers had higher incomes than did parents of voluntary leavers. While the external validity of this finding is suspect because only 36 percent of the ex-cadets responded to Medsger's survey, it does receive some support from a study by Rootman (1970) at the Coast Guard Academy which found the same thing in a survey to which 64 percent of those who left responded.

Another Military Academy study (Marron, 1972a), this one of the classes of 1961-65, compared the Academy performance of students from different socioeconomic groups as measured by the father's occupation. Marron categorized the occupations into 11 groups, such as military, professional, farmer, and laborer. He found that persons in the lower occupational groups applied and were qualified for admission less frequently than average. However, once at the Academy, all groups did equally well as determined by graduation rates and military aptitude ratings.

Home environment

A series of studies done at the Military Academy examined the relationship between attrition and the interaction of home environment and emotional maturity (Marron, 1971a;

1971e). The author of these studies provided no statement of any theoretical system from which he derived the measurement of his major hypothetical construct--emotional maturity--and as a consequence the results are extremely ambiguous and are not easily interpretable. In the first study of this series, the author obtained a measure of the number of typical problems entering-cadets experienced as high school students--problems with classwork, with financial and moral difficulties, with making friends, and with mechanical devices. The author also obtained a measure of the number of artifacts around the home and possessions by the cadet and his family. There was a shopping list of 57 such items the cadet was to choose from, including 9 items specifying the kinds of rooms in a house, 4 specifying types of pets, and 18 specifying various artifacts used in hobbies and sports.

Both of these measures were found to be unpredictive of attrition from the Class of 1972. The author then--without detailing his theoretical rationale--hypothesized that those who had few problems in high school were either mature or overprotected. Maturity was operationalized by an indication of few material possessions and artifacts; while overprotection was operationalized by an indication of many possessions and artifacts. He further hypothesized that there will be less attrition in the group classified as mature than in the group classified as overprotected. Application of a moderator variable design to the Class of 1972 supported the hypothesis. These results were not cross-validated.

We analyzed raw data from the Air Force Academy comparing attrition rates of students from broken homes (one or both natural parents missing) with the Air Force Academy classes of 1971 and 1972 as a whole. No significant differences were found, as shown in table 11.

TABLE 11
ATTRITION OF AIR FORCE ACADEMY STUDENTS FROM BROKEN HOMES VS. OTHERS
AIR FORCE ACADEMY CLASSES OF 1971-72
AS OF JANUARY 31, 1969

	Leavers	Stayers	Total
Broken homes	42 (24%)	130	172
Others	422 (20%)	1,690	2,112
Total	464 (20%)	1,820	2,284

$X^2 = 1.901$, n.s.

Birth order

A slight relationship has been found between a student's birth order within his family and either attrition or selected personality and performance factors.

A study of the Coast Guard Class of 1972 (Rootman, 1970) showed that the more siblings a student has (regardless of his birth order), the less likely he is to voluntarily resign. The relationship was statistically significant but weak (C=.158).

In an analysis of attrition from the Military Academy Class of 1969 (Marron, 1973b), it was found that the total first-year attrition rate among cadets who were a middle child with one or more brothers was somewhat lower (15 percent) than among cadets who were the oldest, youngest, only child, or the middle child with two or more sisters (20 percent). No significant difference was found when a detailed breakdown of all six categories was analyzed.

In an Air Force Academy study (Perry and Payne, 1970) students were categorized as either only-children, first-born, second-born, later-born, and last-born. Groups were compared using various personality measures and admissions and performance criteria.

Only-children as compared to first-borns scored lower on measures of need for consistency, dominance, and autonomy. (Explanations of these characteristics are in chapter 4.) Only-children also had higher military performance ratings. First-borns had a lower need for exhibition and lower anxiety levels. They were also higher in verbal aptitude, but were poorer academic performers in high school. Second-borns had higher anxiety levels and had a higher belief that divine power controlled their fate. Later-borns had a higher need to be with others and were less pessimistic. Last-borns had higher interpersonal aggression scores.

Home geographic region

Students from certain geographic regions are more likely to leave than are those from other regions, but it is not clear whether the distance from the Academy to the parent's home has any effect on attrition.

No study has attempted to find a relation between attrition and distance to home. One study at the Military Academy (Houston, 1970) found that cadets were an average of 500 miles from home whereas civilian students attend colleges that are an average of 75 miles from their homes. In this

connection, a Coast Guard study (Williams et al., 1973) found that a majority of students were dissatisfied with the amount of time they could spend with their families.

An Air Force Academy study (Reho and Brown, 1974) found relationships between various personality and ability factors and a student's home geographic region. Students were considered to be from one of six regions: (1) East, (2) South, (3) Southwest, (4) Industrial Midwest, (5) West, and (6) Alaska and Hawaii.

Several significant differences in personality were noted. Southerners had more belief in divine fate control and were less pessimistic. Easterners had higher interpersonal aggression scores and had more belief in the relativity of truth.

Significant differences in ability revealed that students from the Southwest had scored higher on a measure of mathematical aptitude and southerners were lower in mathematical achievement. Students from the West and Midwest had more physical ability as measured by high school athletic activities and a physical ability admissions score. Students from the East had less leadership ability as measured by a high school leadership index.

Bridges (1970) has reported that attrition from Military Academy classes of 1964 and 1971 is significantly related to the area of the country from which students came to the Academy. As can be seen in table 12, nonacademic losses were lower for those who graduated from schools in the Northeast and significantly higher among those from the North Central area.

TABLE 12
PERCENTAGES OF USMA ENTRANTS FROM EACH AREA WHO WERE RETAINED OR SEPARATED IN CLASS OF 1964, N=782, AND CLASS OF 1971, N=1,044

Area of country	USMA Class of 1964			USMA Class of 1971			
	Grad, '64*	Acad	Non Acad***	Retained 2 yrs*	Acad	Resig***	Other
Northeast	81.7	9.4	8.9**	77.9	4.4	13.1**	4.7
Southern	78.7	8.8	12.6	73.3	5.2	17.6	3.9
N Central	73.6	3.9*	22.5***	68.4	4.1	25.6**	1.9
Western	73.6	13.2*	13.2	73.5	1.8	21.8	2.9
Total	77.8	8.4	13.8	73.4	4.1	19.0	3.5

*P< .01
**P< .05
***P< .01

Source: Bridges, 1970, p. 21.

We also examined cumulative Air Force Academy attrition rates from July 1955 through June 1973 by State and attrition type (for congressional and District of Columbia nominees--86 percent of the total students). We grouped the States by the regions used in the Reho and Brown study. Using chi-square analysis, we found that students from the South, as shown in table 13, had significantly ($P<0.001$) higher overall attrition rates, due to significantly ($P<0.001$) higher academic attrition rates. Students from the West had significantly ($P<0.001$) lower academic

TABLE 13
ATTRITION BY GEOGRAPHIC REGION
USAF ACADEMY CLASSES OF 1959-76
AS OF JUNE 30, 1973

Region	Number entered	Academic attrition	%	Motivational attrition	%	Total attrition	%
East	3,570	253	7.1	671	18.8	1,228	34.4
South	2,462	280	11.4	491	19.9	964	39.2
Southwest	1,219	96	7.9	245	20.1	430	35.3
Industrial Midwest	2,796	173	6.2	565	20.2	957	34.2
West	3,938	235	6.0	860	21.8	1,408	35.8
Alaska, Hawaii	121	11	9.1	18	14.9	35	28.9
Total	14,106	1,048	7.4	2,850	20.2	5,022	35.6

attrition, but significantly ($P<0.01$) higher motivational attrition. Students from the East had significantly ($P<0.02$) lower motivational attrition and students from the Industrial Midwest had significantly ($P<0.01$) lower academic attrition.

CHAPTER 4

RELATION OF PERSONALITY CHARACTERISTICS TO ATTRITION

Extensive studies have been done at all of the academies except the Merchant Marine Academy to determine the relationship between a student leaving and his personality characteristics--including the values he holds, his occupational and academic interests, and his reasons for attending an academy. Some studies have additionally been done to determine whether or not measures of these characteristics would be useful in selecting applicants or identifying those students in need of counseling.

While relatively few of the relationships between personality measures and attribution were found to be stronger than expected by chance, some findings were consistently significant across a number of studies. These consistent findings suggest that a personality profile of the average dropout would describe him in terms of--

PERSONALITY TRAITS, as being unlike his deferential classmate who has a need to get suggestions from others, to find out what others think, to follow instructions, to do what is expected, to accept the leadership of others, to conform to the norm and avoid the unconventional, and to let others make the decisions; rather, the profile would describe the dropout as having a high need for autonomy and perhaps being more anxious, introverted, emotional, and creative.

VALUES, as being more concerned with hedonistic values and gratification of needs for affection and affiliation than with long-range goals and achievement-oriented values.

ACADEMIC AND CAREER INTERESTS, as being less committed to a career in the uniformed service or more interested in the "general education" aspect of the academy.

REASONS FOR ATTENDING, as being strongly influenced by their families to attend the academy.

At the outset of this chapter, particularly, we wish to emphasize a potential pitfall of interpreting group differences. The danger is that, having found average differences between two groups, there is a strong tendency to commit the "ecological fallacy" (Hyman, 1964) of attributing those differences to any one or a set of members of the group. The average score may not at all be the typical

score. In addition, the pattern of a group's scores may be a more important determinant of its behavior than its average on the separate scores.

In an excellently written technical note, Bridges (1975, p. 1) has cogently addressed the implications of basing statistical analysis on tests of average group differences. He supposes that

> For the half of the cadets who were Boy Scouts, the true correlation of Causative Factor X scores with resignation from USMA is -1.00, and for those who were not Boy Scouts the correlation of Factor X scores with resignation is +1.00. Then, for the entire class, the correlation obtained between Factor X scores and resignation would be approximately zero. A factor that might provide a uniquely effective guide to action would be rejected as being of absolutely no value if the usual data analysis techniques are used.

Mathematical derivations are provided in the note to show that statistical significance between factors intrinsically related to attrition and resignation-retention for an entire class are exactly dependent upon: (1) most importantly, the proportion of the class in each of the criterion groups, (2) the magnitude of the relationship or group differences, and (3) the effects of the interactions between the factors.

We stress this particularly now for three reasons. First, most of the findings of this chapter are based on statistical tests of group differences rather than nonparametric tests or observations of distributions as was the case in chapter 2. Second, there have not been even weak tests of interaction effects on attrition as was the case with moderator variable studies in both chapters 2 and 3. Third, the degree of association between personality characteristics and attrition--even when statistically significant--is very weak.

With regard to the weakness of association between personality characteristics and attrition, Grady's (1968b) results are probably typical. He reports results from assessment of the relation between attrition and 31 personality measures obtained from Air Force Academy classes of 1968-71. Correlational analysis showed that the scores of dropouts and persistors did not differ from chance fluctuation on <u>two-thirds</u> of the measures. The range of correlations obtained on the remaining 11 personality measures was 0.112 to 0.057. In other words, from 0.3 percent to 1.2 percent of the variability in attrition could be accounted for by any one of the (statistically significant) individual personality measures.

With these caveats in mind, we will discuss the studies on personality traits, values, academic and career interests, and reasons for attending the academy. The utility of these characteristics in selecting applicants will be noted where such an assessment was made.

PERSONALITY TRAITS

With the exception of a clinical assessment made by a cadet counselor, studies of the relationship between personality traits and attrition have been conducted using standardized, commercially available instruments for measuring those traits. The three most widely used instruments have been the Edwards Personal Preference Schedule (EPPS), the California Psychological Inventory (CPI), and Cattell's Sixteen Personality Factor (16 PF) test. Because of the many esoteric points involved in evaluating the usefulness of personality tests, the interested reader is advised to consult both the test manual and the critical review published in Buros' Seventh Mental Measurements Yearbook (1972). Following is a general description of each test.

The Edwards Scale requires the examinee to choose, from each of 210 pairs of statements, the one more characteristic of himself. The 210 statements, comprise 15 scales which ostensibly provide measures of the individual's "need system," or more appropriately, the goals for which he will strive. The unique feature of the Edwards is that it provides ipsative scores--that is, the individual responds to each statement by expressing a preference for one need over another so that the scores provide a measure not of the absolute strength of each need but the relative strength of one need in comparison to others. The implication of this feature is, as Anastasi (1968) has pointed out, that "the mean intercorrelation of individual scales with any outside variable will approach zero" (p. 454). This artifact of ipsative scoring may partly account for the relatively small number of significant correlations found between scales of the EPPS and attrition.

The California Psychological Inventory consists of 480 "true-false" items yielding scores on 18 scales. Approximately half of the items were drawn from the Minnesota Multiphasic Personality Inventory and the rest were selected on the basis of contrasted group responses using such criteria as school grades, social class membership, and peer ratings. The CPI has been described as "one of the best personality inventories currently available" (Anastasi, 1968: 448).

Cattell's Sixteen Personality Factor Test allegedly provides measures of "the primary source traits of personality

in 16 scales for such bipolar traits as "reserved" versus "outgoing," "humble" versus "assertive," "shy" versus "venturesome," and "trusting" versus "suspicious." The 16 PF appears to fall short of meeting some of the accepted standards for educational and psychological tests and the goals set for test construction. As Anastasi (1968) has pointed out, the reliabilities of the factor scores for any single form are generally low; in fact, the corrected split-half reliabilities for 6 of the 16 scores on both forms combined are less than 0.80 (Cattell and Eber, 1957). There are also serious questions about the factorial homogeneity of items within scales and the factorial independence of the scales. 1/ Finally, Anastasi (1968) points out that "adequate information on normative samples and other aspects of test construction is inadequate" (p. 451).

Findings using the Edwards Personal Preference Schedule

The relationship between the probability of attrition and scores on the EPPS scales was investigated in three studies. The differences between scores of dropouts and persistors on the Edwards has been analyzed for the Class of 1969 (Grady, 1968a) and the classes of 1970 and 1971 (Sena and Westen, 1970) at the Air Force Academy, and for the Class of 1972 at the Coast Guard Academy (Rootman, 1970). The one common finding in these three studies is that those who persist at each academy have a relatively stronger need for deference--to follow instructions and do what is expected, to accept the leadership of others, and so on--at entry, than those who will later drop out. In two of the studies, dropouts scored significantly higher on the need-for-autonomy scale; while in the third, the difference was marginally significant ($p=.09$). High scores on this scale, according to Edwards (1953), characterize an individual with a high need:

> To be able to come and go as desired, to say what one thinks about things, to be independent of others in making decisions, to feel free to do what one wants, to do things that are unconventional, to avoid situations where one is expected to conform, to do things without regard to what others may think, to criticize those in positions of authority, to avoid responsibilities and obligations.

1/ In an unpublished study of the correlates of leadership in a group of 92 Army ROTC students, Harper (1969) found substantial intercorrelation among the 16 PF scores: of the 119 nonredundant intercorrelations, 49 exceeded ± 0.20, 29 exceeded ± 0.30, and 7 exceeded ± 0.60.

The only other statistically significant finding was in the Air Force Academy studies where persistors scored higher on the need for order than dropouts. Edwards' (1953) characterization of an individual who has a high need for order fits the stereotype of a cadet who thrives in a well-structured environment. He needs:

> To have written work neat and ordered, to make plans before starting on a difficult task, to have things organized, to keep things neat and tidy, to make advance plans when taking a trip, to keep letters and files according to some system, to have meals organized and a specified time for eating, to have things arranged so they can run smoothly without change.

The Sena and Westen (1970) study may be particularly significant for understanding the relationship between attrition--and retention, as well--and academy mission performance. These researchers used a repeated measurements design in their study which allows some assessment of the impact of the academy on its students. They found that within 2 years, the level of both the persistor's and the leaver's need for deference have decreased to the point where there is no longer a statistically significant difference between them. Moreover, those who left after 2 years scored higher in the need for deference than their classmates. On the need for autonomy, both the persistor's and the leaver's scores have increased significantly, but there are still statistical differences between them. And surprisingly, those who left after 2 years scored lower on the need for autonomy than their classmates. In fact, within 2 years both those who stayed and those who left changed in exactly the same ways. They were both less conforming and accepting of the leadership of others and more flexible with less need for a structured environment. In addition, they were more independent and self-reliant; needed less support and encouragement; felt less inferiority and guilt; and were more inclined to develop relationships with the opposite sex.

Findings using the California Psychological Inventory

The California Psychological Inventory has been used in three studies: at the Military Academy, it was used to compare scale scores of high-achieving students in the Class of 1973 with their classmates who dropped out (Cross and Cortez, 1971); at the Coast Guard Academy, it was used with the classes of 1968-71 to develop selection equations to predict a retention criterion (Enger et al., 1972), and

to analyze voluntary first-year resignation from the Class of 1972 (Rootman, 1970).

The only CPI scale which was statistically significant across the three studies--the "Achievement via Independence" scale--is a measure of those factors related to a student's interest and motivation which facilitate achievement in a setting where independence and autonomy are valued behaviors. High scores on the scale characterize individuals who are dominant, forceful, self-reliant, and independent. Low scores characterize individuals who are inhibited, anxious, cautious, and submissive and compliant before authority. While dropouts and persistors have received scores on this scale which are significantly different, the direction of these differences has been inconsistent.

Rootman, using a contingency table analysis, found that midshipmen scoring both high and low on the scale were more likely to resign than those scoring in the middle of the range--see table 14. Enger et al., on the other hand, reports that low scores on the scale receive a positive weight in their equation to predict retention using dichotomized dummy variables to indicate low, medium, and high scores on the 18 CPI scales.

TABLE 14

SCORES ON ACHIEVEMENT VIA INDEPENDENCE (AI) SCALE OF CALIFORNIA PSYCHOLOGICAL INVENTORY AND VOLUNTARY WITHDRAWAL FROM THE USCGA DURING THE FIRST YEAR

Status and percentage		Score on AI scale of CPI: Low (40) (N=36)	Medium (40-59) (N=206)	High (60+) (N=50)
Still in	(80%)	75	84	68
Withdrew voluntarily	(20%)	25	16	32
Total %		100	100	100

$X^2=7.73$, df=2, $p < .05$, C=.161

Source: Rootman, 1970: 78.

Cross and Cortez, using analysis of variance techniques, found--see table 15--that high-achieving fourth-classmen scored lower than four groups of their classmates who dropped out at various points in their academic career. However, it is obvious from examination of table 15 that these differences are primarily due to the high achievement scores of the resigning second-classmen.

TABLE 15

CPI ACHIEVEMENT VIA INDEPENDENCE SCORES OF HIGH-ACHIEVING USMA PLEBES vs. VARIOUS DROPOUT GROUPS, CLASS OF 1973

	High-achieving plebes	Dropout groups: Plebe summer	4th class academic year	3rd class year	2nd class year
Mean	18.263	18.394	20.273	20.489	22.042
Standard deviation	3.494	4.374	3.913	3.322	4.258

F ratio=5.2882, $p < .01$

Source: Cross and Cortez, 1971: 7.

There are a number of things which might account for the inconsistency in these findings. One is that 24 midshipmen had left the Coast Guard Academy before the CPI was administered and had they responded, Rootman's results might have shown larger percentages of voluntary withdrawals at the high and medium points of the scale (and consequently a smaller percentage at the low end). However, the plausibility of a "true" curvilinear relationship between independence needs and attrition is strengthened by research using a different "needs" instrument and reported in detail, beginning on p. 40 of this Enclosure.

Among other less consistent findings with the California Psychological Inventory are that the persistor as opposed to the dropout has a greater feeling of self-worth and self-acceptance, has a greater degree of social maturity and integrity, is more likely to achieve in situations where conformity is valued, has a greater capacity for status seeking, is more rigid in his thinking, and is overly deferential to authority, custom, and tradition.

Findings using the
Sixteen Personality Factor Test

Studies of the relationship between 16 PF scores and attrition have been done at each of the military academies. While findings have been consistent where common scoring schemes appear to have been used, they have failed--when tested--to distinguish between those who will drop out and those who will stay. Moreover, some of the findings are not easily interpretable because of serious methodological weaknesses in the earlier, basic research on which they were based.

In studies of the Class of 1974 at the Naval Academy (Howland, 1971b) and of the classes of 1967 and 1968 at the Military Academy (reported briefly in Hays, 1968), the same scoring scheme apparently was used. This scoring scheme is based on second-order factors and "specification equation." Both studies found that resignees tended to be (1) higher in anxiety, (2) higher in introversion, (3) higher in responsive emotionality, (4) more independent, (5) higher in neuroticism, (6) lower in leadership potential, and (7) higher in creativity.

The last two findings--on leadership potential and creativity--were based on "specification equations" derived in earlier 16 PF research employing methodology of dubious value. In the 16 PF literature, specification equations are considered the same as equations derived from multiple regression and discriminant function analyses: that is, they give the best set of weights to be applied to a group of variables in order to maximize prediction according to some criterion. A typical example of the method used to develop these specification equations is provided in an early report by Cattell and Stice (1954) of the 16 PF's power to predict leadership. These researchers found that by weighing each factor score by its correlation with a criterion of leadership election among 334 Officer Candidate School students, they could obtain a multiple correlation of 0.91. Not only is this finding trivial, since such "back-validation" represents what Cureton (1950) referred to as "reliability, validity, and baloney," but also the assumption of zero intercorrelation among factor scores was most probably unjustified.

The first five findings in the academy studies--on anxiety, neuroticism, introversion, emotionality, and independence--were based on second-order factor scores. These are derived from factor analysis of the 16 first-order personality trait scores and are conceptualized as traits which are broader and more extensive in their effects (Bartlett, 1968).

Neither the Howland (1971b) nor the Hays (1968) reports provided sufficient information to assess the significance of the differences between dropouts and persistors on the 16 PF second-order factor scores and the specification scores. However, Howland did present the scores--and as can be seen in table 16, the differences in the average sten scores are not great. He also stated that there were large standard deviations for both groups on all scores. As a consequence, his attempt to predict attrition using the scores produced disappointing results: he was able to correctly predict 62 percent of the attrition, but incorrectly predicted that 38 percent of those who stayed would be dropouts. (It should

be noted that predictive accuracy was based on end-of-first-semester, fourth-class year data, so the percentage of mispredictions may decrease as more attrition occurs from the class studies.)

TABLE 16

MEAN 16 PF SECOND-ORDER AND SPECIFICATION EQUATION SCALE STEN SCORES USNA CLASS OF 1974

Scale (low number to high number)	Sten scores: Early voluntary losses	Sten scores: Remainder of class
Introversion to extroversion	5.05	5.27
Low anxiety to high anxiety	5.93	5.43
Emotional to poised	5.06	5.45
Subdued to independent	5.43	5.00
Less neurotic to more neurotic	6.08	5.51
Leadership potential (low to high)	4.76	5.40
Creative personality (less to more)	5.77	5.15

Source: Howland, 1971: 11.

The third study of the relationship between 16 PF scores and attrition was done by Grady (1968a) on the Air Force Academy Class of 1969. Using first-order trait scores to predict voluntary resignations, this researcher found significant validities on 4 of the 16 standard-scale scores and on a specially constructed "motivational distortion" scale. The current students scored significantly higher on the "distortion" scale because they scored higher on items showing a maximum shift from an anonymous to a job-seeking situation. Dropouts scored significantly lower on this scale. The dropouts also scored higher on scales indicating changeability, impatience, and lack of frustration tolerance.

Clinical assessment

In 1968 the cadet counselor at the Military Academy prepared an extensive report on the characteristics of the 246 cadets who resigned between January 1967 and May 1968 (Burris, 1968). The methods used in preparing the report included reviews of 87 cadet records, personal interviews with 143 cadets, analysis of responses to exit-interview questionnaires by 235 cadets, and a personal interview with each resigning cadet.

While care should be exercised in accepting reported conclusions--very few are based on comparisons between resignees and an adequate control group of current students--the conclusions do represent converging evidence on some of the findings from the standardized instruments for measuring personality. The following paragraphs present the counselor's conclusions with respect to the achievement motivation of resignees, the relationship they had with their peers, their need for independence, and their self-esteem. (The reader is referred to Burris' report for details on how these conclusions were reached.)

> Essentially, the resignees as a group appeared to be largely noncompetitive and not achievement oriented. Most resignees appeared to have much higher needs for affiliation, affection and easy success than they had for achievement, personal accomplishment and hard-fought success.
>
> The resignees tended to be loners, non-participators and interested primarily in introverted types of activities. They had more trouble getting along with other cadets than cadets who do not resign. Although all resignees tended to have difficulty in their inter-personal relationships, the resignees from horizontal style barracks had significantly more difficulty.
>
> Resignees tended to come from the extreme ends in overall score on the Independence Needs scale. This suggested the probable hypothesis that resignees tended to be either highly independent individuals or else highly dependent individuals. Results of this kind suggested explanations for a number of other findings and further suggested the possibility of early identification of resignees. These results also suggested two basic resignee-trend groups.
>
> Resignees were further identified as those cadets with poor self-esteem, inaccurate assessment of their own capabilities, and those with grossly distorted self-esteem. The results indicated a high relationship between independence needs and self-esteem. Resignees with either low or poor self-esteem appeared primarily to be dependent individuals. Those with high self-esteem were largely the ones with extreme high needs for independence (Burris, 1968:2).

The cadet counselor's report on research related to independence needs is worth reviewing because of its bearing on the CPI "Achievement via Independence" research and on other research reviewed in this and the prior chapter.

The sixteen items of the Allport and Tannenbaum (1956) Independence Needs Scale were administered to "a representative group of 212 cadets in the Classes of 1966-69 over a two-year period" and to 183 of the 246 resignees who were intensively studied. While the two groups exhibited a bimodal distribution of scores and the control group distribution tended to normality with slight leptokurtosis, the resignee modes lay approximately +1 standard deviation beyond the control group mean.

Based on these data, Burris concluded that resignees were essentially of two different types of personalities: "very dependent" and "very independent." About 35 percent of the resignees were in the latter group and 29 percent were in the former. Based on their responses to other questionnaire items, Burris concluded that the "very independent" dropouts were likely to be either an only child or a first child, who gave an impression of extreme self-confidence which "in the majority of cases * * * far exceeded what they had demonstrated," who felt they had many friends with whom they were open, and who sought help when needed.

Based on his personal interview, Burris also concluded that these independent resignees are extrapunitive, had poor attitudes toward authority, were egotistical, and were likely to blame academics first and military training second for their resignation. Surprisingly, he also states that "some of the brightest cadets in their respective classes fell into this group" (Burris, 1968: 41).

The "very dependent" resignees, on the other hand, were the youngest in their family and in the personal interview "exhibited nervousness, lacked self-confidence, and gave the impression of being timid and rather immature." They tended to be worriers, procastinators, and lacked self-assurance and self-esteem.

VALUES

Extensive data has been collected at two academies on student values as measured by standardized, commercially available instruments. At the Coast Guard Academy, two value-measuring instruments have been administered to the classes of 1968-72: the Gordon Survey of Interpersonal Values--which measures certain values involving an individual's

relationships to other people or their relationships to him--and the Allport-Vernon-Lindzey Study of Values--which measures the relative strength of an individual's basic interest in the following values: theoretical, aesthetic, social, political, and religious. At the Military Academy, the classes of 1972-75 and 391 officers assigned as of January 1972 were administered the Rokeach Value Scale--a measure of the beliefs an individual has learned about modes of behavior (instrumental values) and about end-states of existence (terminal values).

In Rootman's (1970) study of voluntary resignation from the Class of 1972, none of the Allport-Vernon-Lidzey values were significantly related to attrition, while only the benevolence scale of the Gordon Survey was significantly related. The sign of that relationship indicated persistors were more likely than resignees to value doing things for other people, sharing with others, and helping the less fortunate. The Enger et al. (1972) equation for predicting retention showed negative weights for high scores on the benevolence, independence, and support scales, and a positive weight for a high score on the conformity scale. The prediction equation thus replicates Rootman's findings with respect to the value of benevolence and also further confirms findings from personality trait studies about the relatively independent nature of resignees and conforming nature of persistors.

In his study of the relationship between attrition and Rokeach Value Scales at the Military Academy, Bridges (1972) found that persistors ranked values related to achievement and self-competence higher than those who resigned and ranked social values lower. The persistors assigned higher ranks than those who resigned within 6 months to the terminal value of accomplishment and the instrumental values of obedience, ambition, and responsibility. On the other hand, they assigned lower ranks than the resignees to the terminal values of inner harmony and mature love and to the instrumental values of cheerfulness and imagination. The value systems of the retained cadets were more like those of the West Point officers, while the resignees' value systems were more like those of a national probability sample of men in general.

The findings in the Rokeach Value studies tend to agree with Burris' (1968) clinical assessment that resignees have lower achievement orientations and higher needs for affiliation and affection. They also agree with the personality-trait measurement findings that persistors are higher in deference needs and tendencies to achieve via conformity.

OCCUPATIONAL AND ACADEMIC INTERESTS

Studies of the relationship between occupational interests at entry and the probability of subsequent attrition have been done at each of the academies except the Merchant Marine, and at two of them, studies have also been done on the relationship between academic interests at entry and attrition.

Research on occupational interests has generally been done with well-standardized, extensively researched and widely used instruments; locally developed instruments have been primarily used in research on academic interests.

During the last few years a considerable amount of research has been devoted to the evaluation of the Strong Vocational Interest Blank (SVIB) as an aid in selecting applicants to both the Naval Academy and the Coast Guard Academy. SVIB is probably the most extensively researched and widely used commercial interest test. In its present form, it contains 399 items, covering such topics as school subjects, amusements, occupations, and hobbies, most of which require a response of "like," "dislike", or "indifferent." The rationale behind the Strong is that persons engaged in a particular occupation have a characteristic pattern of likes and dislikes which differentiate them from persons in other occupations--either because they chose to initially or because they dropped out of an occupation whose members who did not fit their own characteristic pattern.

Research with SVIB at the Naval Academy has been directed toward identifying the pattern of interest which differentiates the midshipman who will stay from his classmates who will leave for academic and motivational reasons. The most recent report of this research (Abrahams and Neumann, 1973) is based on the classes of 1971 and 1972. Analysis of SVIB scores for those classes shows that academic dropouts differ, from midshipmen who stay, in their expressed interest on three clusters of items: a science cluster, a mechanical cluster, and an achievement motivation cluster. Motivational dropouts express less interest than retained midshipmen in four clusters of items, having less liking for items related to leadership activities, military activities, sports, and extroversion. Combining the clusters into scales for predicting academic and motivational attrition produces significant cross-validities in new samples.

In their extensive analysis of potential predictors of attrition from the classes of 1968-72 at the Coast Guard Academy, Enger et al. (1972) found that an equation containing 30 items from SVIB was the best single predictor

from a group of 9 other equations containing items of information from standard psychological inventories (some of which have been discussed previously), from College Board entrance scores, and from academy-developed questionnaires--see table 17. Enger et al. reported that the full-model, cross-validated scores developed by a multiple regression equation had a biserial correlation with a retention criterion of 0.26. A reduced model consisting of only SVIB and Adjective Check List scores produces a cross-validated correlation of 0.254 with the criterion. The authors estimate that adding SVIB and Adjective Check List to the current selection battery would result in an 8-percent reduction in attrition.

TABLE 17
SUMMARY OF RESULTS FROM USCGA SELECTION RESEARCH
CLASSES OF 1968-72

Instrument	No. of dummy variables in equation	Point-biserial correlation coefficients			Cross-validation sample (percent)	
		Developmental sample	Cross validation sample	Chi-square	Observed graduation rate	Predicted graduation rate
Adjective Check List	10	0.31	0.18*	8.4**	56.5	65.1
California Psychological Inventory	7	0.25	0.12	5.2*	55.9	62.1
Gordon Interpersonal Inventory	4	0.21	0.16	7.1**	55.5	63.6
Minnesota Counseling Inventory	4	0.20	0.09	5.7*	55.5	61.0
Strong Vocational Interest Blank	30	0.44	0.21	13.5**	55.7	65.5
Educational and Activities Questionnaire	4	0.11	-0.03	0.5	53.0	51.4
Fourth Class Questionnaire	9	0.22	0.17*	12.2**	51.4	60.1
Interviewing officer's report	15	0.18	0.06	0.0	51.2	51.5
Entrance examinations	15	0.23	0.06	1.5	50.7	53.7
Secondary school	20	0.33	0.17*	2.9	54.6	62.9

*Statistically significant at the 5 percent level.
**Statistically significant at the 1 percent level.
Source: Enger et al., 1972: 29.

It is interesting to note that in comparison with the results of SVIB research at the Naval Academy (Abrahams and Neumann, 1973), Enger et al.'s (1972) findings appear much less consistent conceptually. Our attempt to rationally place SVIB items into clusters resulted in many single-item clusters. The largest--a leadership cluster--contained only four items, and the next largest--an achievement motivation cluster--contained only three items. Retained cadets scored higher than dropouts in both clusters.

Probably the second most extensively researched and widely used commercial interest test is the Kuder Preference Record, which has been used at the Air Force Academy in research with the classes of 1972 and 1973 (Spence, Sena, and Westen, 1971). The form of the Kuder used in this research--Form DD: Occupational Interest Survey--provides scores which represent the extent to which an examinee's preferences are typical of those who belong to 79 different occupations or are enrolled in one of 20 college-major fields or resemble preferences of a typical Military Academy cadet and a typical Air Force Academy cadet. Their findings were completely negative. On none of the 19 scales did those who left differ significantly from those who stayed.

Spence et al. (1971) suggest that their negative findings might have been due to deliberate faking of answers, use of only 19 scales, or the possible inappropriateness of their statistical analysis. Abrahams and Neumann (1973) further point out that use of scores empirically derived by item analysis may have led to more positive results. It might be added that in view of the findings with SVIB, it is possible that the Spence et al. results were due to use of an inappropriate instrument. And, of course, it is possible that Air Force Academy cadets simply do not differ in their pattern of preferences from their classmates who leave.

In his study of voluntary withdrawal from the Coast Guard Academy, Rootman (1970) used an occupational value questionnaire which asks respondents to indicate the importance to them, in an ideal job, of opportunities to

--use special abilities or aptitudes,

--earn a great deal of money,

--be relatively free of supervision,

--work with people rather than things,

--obtain social status and prestige,

--be creative and original,

--have a stable, secure future,

--exercise leadership,

--be helpful to others, and

--experience adventure.

This instrument was much less rigorously developed and tested than either the Strong or Kuder tests. No reliability or validity data have been reported on it, although normative data are available from a nationwide sample of 4,585 students who were in college in 1952. Nonetheless, Rootman's findings with the questionnaire are interesting because of their similarity to other findings from studies using different types of instruments. Of the 10 opportunities listed, dropouts assigned significantly higher importance than current students only to "freedom from supervision by others," while the current students assigned significantly higher importance to "exercise leadership" and "experience adventure."

Both the Military Academy and the Coast Guard Academy have been administering locally developed questionnaires to their recent entering classes and attempting to determine how career and academic interest--among other things--are related to attrition. Since the relevant responses on these questionnaires are often provided in a "reasons for coming to the academy" context, they will be discussed in the next section.

REASONS FOR ATTENDING

At the Military Academy, Spencer (1970) conducted a study of the sociopsychological characteristics of early leavers from, and stayers in, the Class of 1973 and found certain characteristics which differentiated them. Marron (1972c) replicated the study with the Class of 1975 and found the majority of original observations still valid. In his summary, Marron states that:

> On reasons for choosing to enter USMA, four of six observations were supported. That is, the leaver is less interested in becoming an Army officer, is more interested in financing an education, and is more likely to have entered USMA to please family or friends.
>
> On what entrants hope to attain from attendance at USMA, four of six observations

were supported; i.e., leavers place less importance on character development, are less interested in a good military education, and place a higher priority in a good general education. (p. 20)

While not related to reasons for attending, Marron's (1972) replicated findings on (1) the comparison of opportunities at the Military Academy with those of other colleges and universities and (2) the factors influencing a desire to remain at the Academy are especially interesting in view of the themes of needs for affiliation and autonomy expressed in the personality trait research. His conclusions with respect to these findings were that:

> On a comparison of opportunities at USMA with those of other colleges and universities, three of six observations were supported; i.e., the leavers see USMA as providing less opportunity for lasting friendships, making one's own decisions, having a sense of belonging, and having time for study (self-actualization or group relatedness).
>
> On factors influencing a desire to remain at USMA, all three observations were supported; that is, internal factors of a military or confining nature repel and external factors such as opinions of parents and friends, and opportunities elsewhere attract the leaver. (p. 21)

In the Coast Guard Academy classes of 1971-74, the most consistent differences between those who stayed and those who resigned early, in terms of their reasons for attending, was the initial high level of commitment to a Coast Guard career and the affirmativeness of the reason for attending the academy--see table 18. The most consistent and largest difference between the two groups was in the strength of the desire for a good engineering education.

TABLE 18

PERSONAL REASONS FOR COMING TO THE COAST GUARD ACADEMY CHECKED AS ABOVE AVERAGE OR VERY INFLUENTIAL BY ENTRANTS AND EARLY RESIGNEES CLASSES OF 1971-74

Reason	Percent checking						
	1971		1972		1973		
	Entrants	Resignees	Entrants	Resignees	Entrants	Resignees	Entrant
Desire for a good engineering education	48	20	46	34	40	35	40
Really didn't know what to do and thought I would give it a try	24	32	25	29	20	32	22
Definite desire to become a Coast Guard officer	31	29	29	18	37	30	43
Desire not to be a financial burden on my parents	48	44	44	64	45	47	49
Parents urged me to "give it a try"	12	12	12	26	11	15	11
Definite desire for a sea-going career	22	23	20	8	25	25	26

TABLE 18

PERSONAL REASONS FOR COMING TO THE COAST GUARD ACADEMY CHECKED AS ABOVE AVERAGE OR VERY INFLUENTIAL BY ENTRANTS AND EARLY RESIGNEES CLASSES OF 1971-74

	Percent checking							
	1971		1972		1973		1974	
	Entrants	Resignees	Entrants	Resignees	Entrants	Resignees	Entrants	Resignees
n- on	48	20	46	34	40	35	40	27
lve	24	32	25	29	20	32	22	47
be- d	31	29	29	18	37	30	43	20
on	48	44	44	64	45	47	49	67
	12	12	12	26	11	15	11	33
r	22	23	20	8	25	25	26	13

CHAPTER 5

EXTERNAL EFFECTS ON ATTRITION

Personal and societal events and influences external to an academy may affect attrition in two ways--either by affecting the individual student while he is at the academy or by affecting the characteristics of those who apply for admission. The types of external events and influences which might contribute to a student's decision to leave an academy include reference group influences, availability of alternatives, service personnel policies, and certain national events. It is also possible that these last two--service personnel policies and certain national events--may have adversely affected the characteristics of those who apply to the academies.

Almost all of the studies of the effect of external events and influences on attrition have been done by the Military Academy and the Air Force Academy. These studies are reviewed in two sections--the first deals with external effects on the individual student; the second with their effects on applicant characteristics.

INDIVIDUAL EXTERNAL EFFECTS

The findings from studies on the affects of reference group influences--both family and peer--on attrition are inconsistent and weak, perhaps due to the generally inadequate research procedures employed. Evidence on the impact of available alternatives on a student's decision to leave is also weak and extremely circumstantial and contradictory. In the only study we identified of the impact of world events, first-summer resignees from the Class of 1975 at the Military Academy reported that certain of those events had a significantly greater negative influence on their career commitment than did those who later resigned and those who stayed (Marron, 1972c). With respect to service personnel policies, trend and self-report data show some to have an impact while others do not.

Reference group influences

In recent years the Military Academy has conducted a number of studies varying in methodological quality on the affects of family and peer group influences on attrition. Some indication of the significance of family influence is shown by the fact that from 22 to 32 percent of three different classes stated, just before graduation, that they would probably have resigned had it not been for

parental pressure to stay (Bridges, 1967; Houston, 1969; 1970b). In addition, Medsger's (1971a) survey of ex-cadets of the Class of 1971 found that parents or other relatives were the only individuals, in the judgments of the respondents, who might have influenced them to stay.

The only Military Academy study that assessed family influences on dropouts and persistors together examined responses to a number of questions by three groups: (1) first-summer resignees of the Class of 1971, (2) members of the classes of 1968-70 as of September 1968, and (3) graduates of the Class of 1967 (Longo, 1970). For what it is worth, the study found that 47 percent of the resignees said that they were very likely or almost certain they would have resigned, despite the reaction of their family, as compared to 10 percent of the other two groups combined who responded the same way. The author himself cautions that when interpreting this result:

> It should be noted that this question itself is not readily meaningful to the resignees group. Since the cadets have resigned, for all practical purposes, at the time of their exit interviews, it is conjectured that they may have been distracted by the grammatical tense of the question and not provided the response that was apropos to their resignees status. The findings discussed above are therefore qualified to this extent. (Longo, 1970: 21.)

In the same study, Longo also found that the nonresignees tended to say that they or their families were more enthusiastically in favor of their appointment, their coming to and graduating from the Academy. While the differences in responses by the resignees and nonresignees to the four questions making up this finding were significantly different according to the author, he also reported that the average correlation of these responses to the attrition criterion was only 0.02 (but must have meant the square root of 0.02, or 0.14--thus accounting for 2 percent of the variance in attrition). As the author again points out, such results may be statistically significant, but are practically meaningless.

Two studies done at other academies also focused on the possible effects of family influences on attrition. In his study of voluntary withdrawal from the Coast Guard Academy, Rootman (1970) found that the frequency of a student's contact with his family was not significantly related to his chances of leaving, but ratings of the importance of the father and the brother in helping the

individual choose to come to the Academy and to withdraw were significantly related to attrition. (Interpreting the meaning of response to such a "double barrelled" question--"come to and withdraw from"--is difficult.) Individuals who noted that fathers and brothers were important were less likely to withdraw than those who did not note their importance.

Parental pressure to stay seems to have little effect on Air Force Academy dropouts, according to data collected by Jarrell (1971) in his 1-year followup survey of fourth-class dropouts from the Class of 1972 to which 57 percent of the population responded. Less than 2 percent of the respondents had parents who encouraged them to leave the Academy; almost half had parents who exerted moderate or extreme pressure to stay, and about 38 percent claimed that parental pressure was not a factor in their leaving. It should be noted that these percentages may be biased due to nonresponse by 43 percent of the surveyed population.

The relationship a student has with peers outside the academy does not appear to have much of an affect on his probability of leaving. The one major study we identified in this area was done by Marron (1972b) on one-half of the Military Academy Class of 1975. Working within the framework of reference-group theory, Marron hypothesized that a person with a small primary reference group and few, if any, secondary reference groups is likely to be very insecure in an environment where he is out of contact with the members of his primary reference group. The situation was thought to be even worse if his primary reference group is opposed to the student coming to the Academy. In order to test these hypotheses, cadets were asked a number of questions about people and groups they knew prior to entering the Academy. A number of operational measures were developed to test hypotheses about the relationship between theoretical reference group characteristics and performance or attrition. Marron reports that he "did not uncover any clear relationships between the independent variables and either of the criteria" (1972: 9).

About the only other aspect of the effect of peer influences about which anything is known--even in any unsystematic way--relates to a student's female peers (or lack thereof).

It is difficult to estimate the number of students who resign to get married. Medsger's (1971a) survey of ex-cadets found that 20 percent of all voluntary leavers were married within a year of dropping out as opposed to 3 percent of involuntary leavers. Data from Air Force exit questionnaires (Short, 1973) shows that 91 percent

of all leavers have no marriage plans. A comparative analysis of students entering the Military Academy with those entering other colleges (Houston, 1970) showed that more entering-Academy students expected to be married during or within a year after college than did their civilian peers. One of the "sociopsychological profile" studies referred to in the previous chapter (see p. 47) found that first-summer leavers were more likely than those who stayed to feel that there was less opportunity to meet girls at the Academy than at other colleges and universities (Spenser, 1970); but the replication on another class failed to confirm the finding (Marron, 1972c).

Available alternatives

The attractiveness of alternatives available to a particular role is a critical notion in certain social-psychological and sociological theories of voluntary withdrawal from groups and organizations. March and Simon (1958), for example, see the availability of alternatives as indirectly, and over the long term, affecting an individual's decision to withdraw from an organization by affecting his aspiration level and, consequently, his calculation of the benefits and cost of staying in the organization. These writers also see alternatives as directly and immediately affecting the withdrawal decision of the individual whose perception of benefits no longer equals or exceeds his perception of costs.

There are a number of studies of academy attrition which investigated the relationship between available alternatives and withdrawal which were done within a March and Simon theoretical network or can fit into it. These studies are concerned with the impact of changing the military draft procedures, the comparative opportunities provided by an academy, and the effect of scholarship offers from other institutions.

Two studies have been done on the relationship between attrition and the change of the military draft to a random lottery in 1969. The hypothesis underlying these studies was articulated by Beusse (1974: 3) who stated that:

> A relationship between the draft and academy attrition could have taken either of two forms. First, draft vulnerability [1/] may have acted

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[1/"Draft vulnerability" is a state of mind which was inferred in both of the studies reviewed. However, there is little doubt that it was a real phenomenon for those who were concerned about their draft status. As Houston (1974: 3) points out in his study:

> as a deterrent to attrition. That is, cadets and midshipmen with low lottery numbers who were considering leaving may have been deterred by their high probability of induction. On the other hand, lack of draft vulnerability may have acted as a facilitator by lowering the "cost" of dropping out. If the draft acted as either a deterrent or facilitator, the proportion of men with low RSNs [2/] who attrited should be lower than the proportion of high RSN men who attrited.

No significant relationships were found in either of the two studies reviewed: Beusse's (1974) study which examined the relationship in a number of different ways for all students enrolled in the three military academies during 1969-72, and Houston's (1974) study which examined the relationship for the classes of 1972 and 1974 at the Military Academy using a slightly different procedure.

The only studies we identified of the comparative opportunities of an academy over those of other colleges and universities are the "socio-psychological profiles of stayers versus leavers" done by Spencer (1970) and Marron (1972c). The following differences between those who left early and those who stayed were found consistent across the two classes: those who left during the first summer saw less opportunity at the academy to (1) make their own decisions, (2) study, (3) have a sense of belonging, and (4) make lasting friendships. These results are similar to those discussed in the prior chapter which indicated that dropouts have high needs for affiliation and autonomy. However, the results were not sufficiently explicated--nor was the study designed--to permit determining whether or not (1) other colleges and universities were actually perceived as alternatives to the academy, and (2) if so, whether these perceptions affected attrition directly or indirectly.

[At the time of the first lottery drawing (1 December 1969), Selective Service officials were widely quoted to the effect that individuals with very low numbers (e.g., 1-100) were almost certain to be drafted, while those with very high numbers (e.g., 240 and up) would almost certainly not be drafted. In 1970, no local draft board drafted anyone with a number higher than 195, while in 1971 the actual cutoff number was 125.

[2/"RSNs" were the Random Sequence Numbers resulting from the lottery drawings.]

There is little data on the effects of scholarship offers from other institutions on attrition. One academy official has said that many athletes who leave have definite scholarship offers from other institutions. While athletes at this academy do drop out more frequently than nonathletes, the attrition may be due to a number of things other than, or in addition to, more attractive alternatives. A different situation holds for academic scholarship offers, according to the one study we identified which addressed the relation of such offers to attrition (McLaughlin, 1971b): those who stayed had significantly more offers than those who left in the first year. Obviously, more study of this topic is needed before conclusions can be drawn.

Impact of national events

The only studies which directly examined the impact of national events on attrition were, again, the "leaver versus stayer profile" studies of Spencer (1970) and Marron (1972c). Table 19 shows the average scores received by two groups of dropouts and one group of persistors on three national-event questions asked in the two studies. Perhaps as interesting as the differences among groups in a class is the fact that--except in one instance--the scores dropped for each group across the classes.

TABLE 19

FACTORS INFLUENCING DESIRE TO PURSUE A MILITARY CAREER

	Class of 1975 average score			Class of 1973 average score		
Factor	NCB leavers	Early 4° leavers	Stayers	NCB leavers	Early 4° leavers	Stayers
Present world situation	2.07*	2.36	2.48	2.56	2.61	2.56
Turmoil on college campus	1.98*	2.22	2.46	2.17*	2.42	2.39
Public opinion regarding U.S. military commitments	1.93	1.95	2.06	2.25	2.23	2.20

Source: Marron, 1972c.

*Asterisk indicates resignee group significantly different from stayer group ($p < .05$). Scores range 1-3 with larger score indicating item increases desire for a military career. The weights were: 1=decreases my commitment; 2=have no effect upon my commitment; 3=increases my commitment.

SOCIETAL EFFECTS

We could find no studies dealing with societal influences on a student's decision to leave the academy or on the characteristics of students applying for admission that were interpretable or valid.

CHAPTER 6

RELATION OF THE ENVIRONMENT TO ATTRITION

Several studies done at the Military Academy and the Coast Guard Academy show that a student's commitment to a military career and the image he has of the Academy decrease the longer he is there. Bridges (1969) has found that the average student in the Military Academy classes of 1969-72 had a lower commitment to a military career when he graduated than when he entered. Bridges also found that commitment to graduation had a high initial level and increased every year up to graduation, while commitment to a military career had a lower initial level and decreased each year until graduation.

A survey of freshman in the Class of 1970 at the Coast Guard Academy (Williams, Wells, Korb, and DeMichiell, 1973) found that 73 percent listed their probable career occupation as "military science." As seniors, only 42 percent of this class listed the same probable career occupation. Even if other career speciality occupations important for Coast Guard service officers are included, the total percentage of seniors listing such service-relevant probable occupations is 62; however, 90 percent of the freshmen listed such probable occupations.

The overall image of the Military Academy as perceived by its students has decreased in recent years. Bridges (1971) reports that the number of students who would encourage an outstanding high school student to come to the Academy rather than to a prestigious civilian college has been decreasing from the graduating Class of 1958 to the Class of 1970. Moreover, 90 percent of the graduating Class of 1958 said that if they could reconsider their original decision, they would still come to the Academy; but only 47 percent of the graduating Class of 1971 felt the same. Furthermore, 35 percent of a sample of the Military Academy graduating Class of 1971 had positive feelings about their school and 27 percent had negative feelings, while 81 percent of a civilian college sample in the same year had positive feelings about their school and only 5 percent had negative feelings.

One possible cause of a student's decreased commitment to a military career and the low image of an academy among its students could be the academy environment. Since Bridges (1969) found that first-year dropouts had lower commitments to both graduation and a military career than did their peers, it can be further inferred that although the academy environment appears to have a negative effect on many of its students, the effect on some is perhaps of such a magnitude that it

exceeds the level that these students are willing to tolerate and, therefore, contributes to their dropping out.

STUDIES OF THE ENVIRONMENT

Most studies done by the academies have examined student characteristics which might be related to attrition. Few have attempted to examine what effect, if any, the academy environment has on a student's decision to leave. Of these studies, even fewer have been designed to find causal or even associative relationships between attrition and the environment.

The environmental studies employed various methodologies. Most consisted of administering some type of questionnaire to either a group of stayers or leavers, but usually not both. Others attempted to correlate previously collected information, such as performance data, with attrition or retention. Several studies were accounts by people presently or formerly associated with an academy about their experiences at and observations of the academy.

This chapter will look at studies done by the academies. (The next chapter will report on those done about the academies.) The first part of this chapter is organized around specific studies done by each of the academies; the second part is organized around various topics which may be related to attrition.

AIR FORCE ACADEMY STUDIES

Two studies have been done by the Air Force Academy which deal with academy environment. The first was a comprehensive attempt to discover what relation, if any, various aspects of the Academy program had to attrition (Hunt et al., 1969). This has come to be known as the Morman Report, after the superintendent who commissioned the study. It is by far the most ambitious attempt to examine aspects of an academy environment as they might relate to attrition. For the study, subcommittees were assigned to examine 13 areas of interest, not all of which were related to the environment. Each of the subcommittees responded to an ad hoc committee which directed the overall study and evaluated the adequacy of the methods used to obtain the individual results. The Class of 1972 was used throughout the study.

The Air Force Academy has also used exit questionnaires (Short, 1972 and 1973) to obtain information about and opinions held by those students who leave the Academy prior to graduation. Analysis was based on trend comparisons. Over the 5-year period from July 1968 through June 1973 for which this data was available, about 68 percent of those who dropped out in 3 of the years responded to the exit questionnaires, and about 90 percent responded in the other 2 years.

The results of these studies will be discussed together as they relate to (1) attrition during the first summer, the fourth-class year, and certain transition periods, and (2) the effect on attrition of upperclass leadership and demands on a student's time.

First-summer attrition

A student's first summer at the Academy is a period of intense and stressful military training. According to the exit interviews, the vast majority of dropouts felt that they had been mentally and physically prepared for their first-summer training, and most felt that it was valuable to them. However, about 10 percent thought that their first summer had harmful effects on their personality or character.

The subcommittee responsible for studying the first summer questioned 100 randomly selected students, who did not leave during their first summer, about the motivational impact of various aspects of that experience. The subcommittee itself noted several deficiencies in the design of its study--due to time constraints--which limited the usefulness of its findings. Specifically, it noted that "no meaningful analysis of the reasons for attrition by those who left was undertaken" and that "the lack of combining variables in analyzing the cadet perception is a definite shortcoming" (Hunt et al., 1973b: app. 7, p. 12). Moreover, the ad hoc committee to which the subcommittee reported questioned the basic assumptions of the report that the philosophy of the summer camp

program 1/ was sound and that the entering cadet is motivated towards the Air Force and the Academy. The committee also noted that the questionnaire had unknown psychometric properties--that is, reliability and validity--and had not been administered to dropouts.

The subcommittee examined 67 different aspects of the first-summer program and found that the current students surveyed felt one-third of those aspects to be below average--that is, "demotivating"--in their effect on motivation toward the Academy and a military career. These demotivating aspects were concerned with more mundane or anachronistic factors of military life, such as shaved heads, processing, and drills.

First-year attrition

A student is subjected to almost constant stress during his first year under an organized program known at the academies as the "Fourth Class System." The exit interviews show that the Fourth Class System is a reported source of dissatisfaction for many leavers and the cause of resignation for a few.

The subcommittee responsible for studying the Fourth Class System concerned itself with 86 students of the Class of 1972, who voluntarily departed prior to November 22, 1968. They concluded from exit interviews and mental health records that only 25 percent of these students left because of the Fourth Class System. The subcommittee also distributed an open-ended questionnaire to a sample of students still at

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1/That philosophy, as expressed in the Air Force Cadet Wing Manual 50-1 (4 June 68), para. 4, is:

> A period of accelerated learning during which basic cadets are inducted into an environment and training program that demands mental alertness, physical endurance, and emotional stability. The basic cadet is stripped of his previous symbols of prestige, and forced to draw upon his own abilities to establish his place in the Cadet Wing. He is subjected to rigorous discipline; he learns instantaneous obedience, attention to detail, punctuality, and fundamentals of military life and knowledge. He is instructed in the need for high standards of individual ethical values, and is given an understanding of the need for a strong sense of personal responsibility and reliability--Contrails is thoroughly studied. Successful completion of this phase of training is rewarded by being accepted into the Cadet Wing, and the right to be called Fourth Class cadets.

the Academy asking them to describe the most and least beneficial aspects of the System. Responses were received from 280 cadets. Based on these two sources of information, the subcommittee concluded:

> The Fourth Class System is basically sound, serves the best interests of the Academy, and is not nearly as objectionable to those 'under the System' as one might presume.

The ad hoc committee criticized the subcommittee for not attempting to discover how many of the involuntary losses were due to the System and also for not having a large enough sample of current students.

Upperclass leadership and attrition

The exit interviews show that more than half the departing students felt that the military training indoctrination they received from upperclassmen was not effective.

The upperclass leadership subcommittee interviewed an unspecified number of students and military training officers and examined the records of departed students. The subcommittee recognized that this unscientific approach could produce conclusions based only on inference, not fact. Nevertheless, it concluded that upperclass leadership did contribute to first-year attrition, insomuch as there was general disagreement about the objectives of the Fourth Class System, and upperclassmen, because they were inadequately prepared, often "perceived their leadership functions as traditional harassment" (Hunt et al., 1969a: 16).

The ad hoc committee had no basic disagreement with the report, although it recognized its limitations.

Demands on students' time

Academy students, especially during their first year, have little free time. Close to half of the departing students reported leaving because of, among other reasons, the regimentation and lack of personal freedom.

A subcommittee of the ad hoc committee questioned 73 first-year students (a sample size they felt was adequate) and concluded that the schedule was related to attrition. They found that the schedule, as seen by first-year students:

> Was the embodiment of inflexibility and the heart of many dissatisfactions; that they had little free time, little time to think, and little time to recuperate from the anxieties and interruptions imposed by the upperclassmen.

The ad hoc committee questioned the sample size but accepted the findings. It expressed concern as to whether the Academy environment was responsive enough to changing realities outside the Academy.

Transition periods

One subcommittee of the ad hoc committee looked at the various transition periods between various aspects of the students' training (civilian to summer training, first half of summer training to second half, and summer training to academic year). Their findings were generally subjective. They concluded that the transitions were often confusing, and the transition formalities were of questionable value. Furthermore, new students needed to be told the purposes of the Fourth Class System. The ad hoc committee was in general agreement.

MILITARY ACADEMY STUDIES

Information about the Military Academy environment comes from a set of standardized environmental measuring instruments and from the cadet counselor's clinical assessment of reasons for leaving, which was discussed in chapter 4.

Standardized measures of the environment

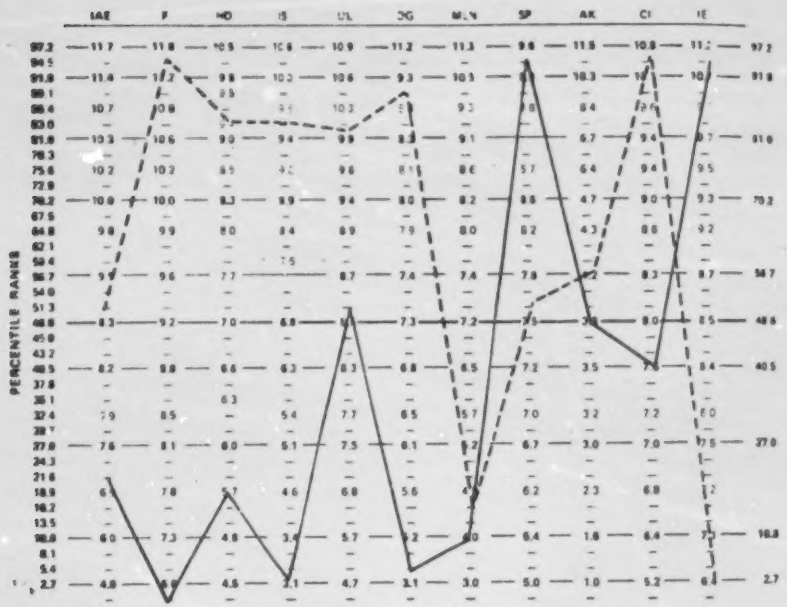
Three studies at the Military Academy have been done using standardized, commercially available measures of a college environment. One study was designed to collect normative data for a new instrument developed to aid colleges and universities conduct self-assessments (Peterson, Hartnett and Centra, 1970). Faculty of the Military Academy participated in the study. Chart 3 shows their perceptions of the Academy on 11 different dimensions (with definitions) contrasted with the perceptions of their own institution by educators from a selective liberal arts college.

Careful reading of chart 3 shows that the Academy faculty perceive their institution to be in the bottom quartile on 6 of the 11 dimensions. These six dimensions are concerned with (1) academic and personal freedom, (2) democratic governance of the institution, (3) homogeneity of background and attitude of the faculty and students, (4) concern for improving and changing society, (5) extent of extracurricular intellectual and aesthetic stimulation,

CHART 3

INSTITUTIONAL FUNCTIONING INVENTORY SCALE MEANS AND DEFINITIONS

IFI Institutional Means



——U.S. Military Academy
---Selected Liberal Arts College

Source: Loye, 1970: 65, 66.

Scale Definitions

Intellectual-Aesthetic Extracurriculum (IAE): the activities and opportunities for intellectual and lation are available outside the classroom.

Freedom (F): the extent of academic freedom for f as well as freedom in their personal lives for all campus community.

Human Diversity (HD): the degree to which the fac body are heterogeneous in their backgrounds and pr

Concern for Improvement of Society (IS): the desi at the institution to apply their knowledge and sk social problems and prompting social change in Ame

Concern for Undergraduate Learning (UL): the degr college--in its structure, function, and professio of faculty--emphasizes undergraduate teaching and

Democratic Governance (DG): the extent to which i the campus community who are directly affected by the opportunity to participate in making the decis

Meeting Local Needs (MLN): institutional emphasis educational and cultural opportunities for all adu rounding communities.

Self-Study and Planning (SP): the importance coll attach to continuous long-range planning for the t and to institutional research needed in formulatin plans.

Concern for Advancing Knowledge (AK): the degree institution--in its structure, function, and profe ment of faculty -emphasizes research and scholarsh extending the scope of human knowledge.

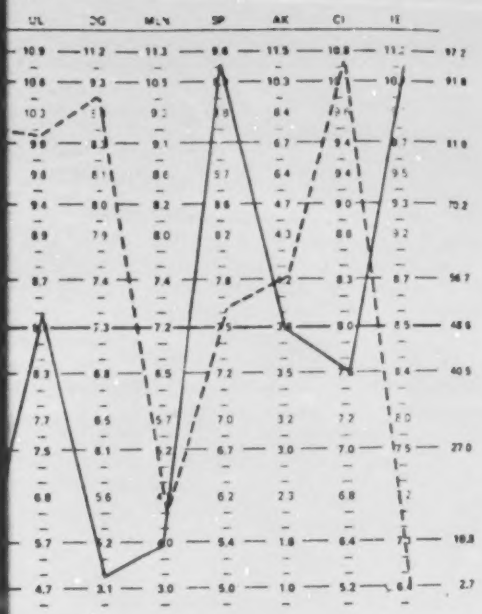
Concern for Innovation (CI): the strength of insti mitment to experimentation with new ideas for educ

Institutional Esprit (IE): the level of morale an purposes among faculty and administrators.

CHART 3

NSTITUTIONAL FUNCTIONING INVENTORY SCALE MEANS AND DEFINITIONS

Means



ademy
Arts College

65, 66.

Scale Definitions

Intellectual-Aesthetic Extracurriculum (IAE): the extent to which activities and opportunities for intellectual and aesthetic stimulation are available outside the classroom.

Freedom (F): the extent of academic freedom for faculty and students as well as freedom in their personal lives for all individuals in the campus community.

Human Diversity (HD): the degree to which the faculty and student body are heterogeneous in their backgrounds and present attitudes.

Concern for Improvement of Society (IS): the desire among people at the institution to apply their knowledge and skills in solving social problems and prompting social change in America.

Concern for Undergraduate Learning (UL): the degree to which the college--in its structure, function, and professional commitment of faculty--emphasizes undergraduate teaching and learning.

Democratic Governance (DG): the extent to which individuals in the campus community who are directly affected by a decision have the opportunity to participate in making the decision.

Meeting Local Needs (MLN): institutional emphasis on providing educational and cultural opportunities for all adults in the surrounding communities.

Self-Study and Planning (SP): the importance college leaders attach to continuous long-range planning for the total institution, and to institutional research needed in formulating and revising plans.

Concern for Advancing Knowledge (AK): the degree to which the institution--in its structure, function, and professional commitment of faculty--emphasizes research and scholarship aimed at extending the scope of human knowledge.

Concern for Innovation (CI): the strength of institutional commitment to experimentation with new ideas for educational practice.

Institutional Esprit (IE): the level of morale and sense of shared purposes among faculty and administrators.

and (6) emphasis on providing educational and cultural opportunities to the local community. The lowest ratings--5th percentile or lower--were given to academic freedom, democratic governance, and meeting local needs. The highest ratings were given to institutional esprit and to the need for continuous, long-range institutional research.

The second study using a standardized environmental measuring instrument was conducted by medical officers at the Academy (Lauterbach and Vielhaber, 1965). The College Characteristics Index (CCI) was used in this study. The CCI is composed of 30 scales: 10 which measure the intellectual climate of a college, 12 which measure the nonintellectual climate, and 8 which measure aspects common to both climates. The subjects for the study were two samples of Military Academy cadets: (1) a group of randomly selected first classmen from the Class of 1960 and (2) all fourth classmen from the Class of 1963. The seniors were administered the CCI in March 1960. The freshmen group consisted of all who were available for testing in December 1959.

The results for the Academy students and students from four engineering colleges are shown in chart 4. The more positive the score, the more the scale is "true" for the particular college. The more negative the score, the more the scale is "false." Approximately 67 percent of the 32 colleges in the standardization group received scores between +2.

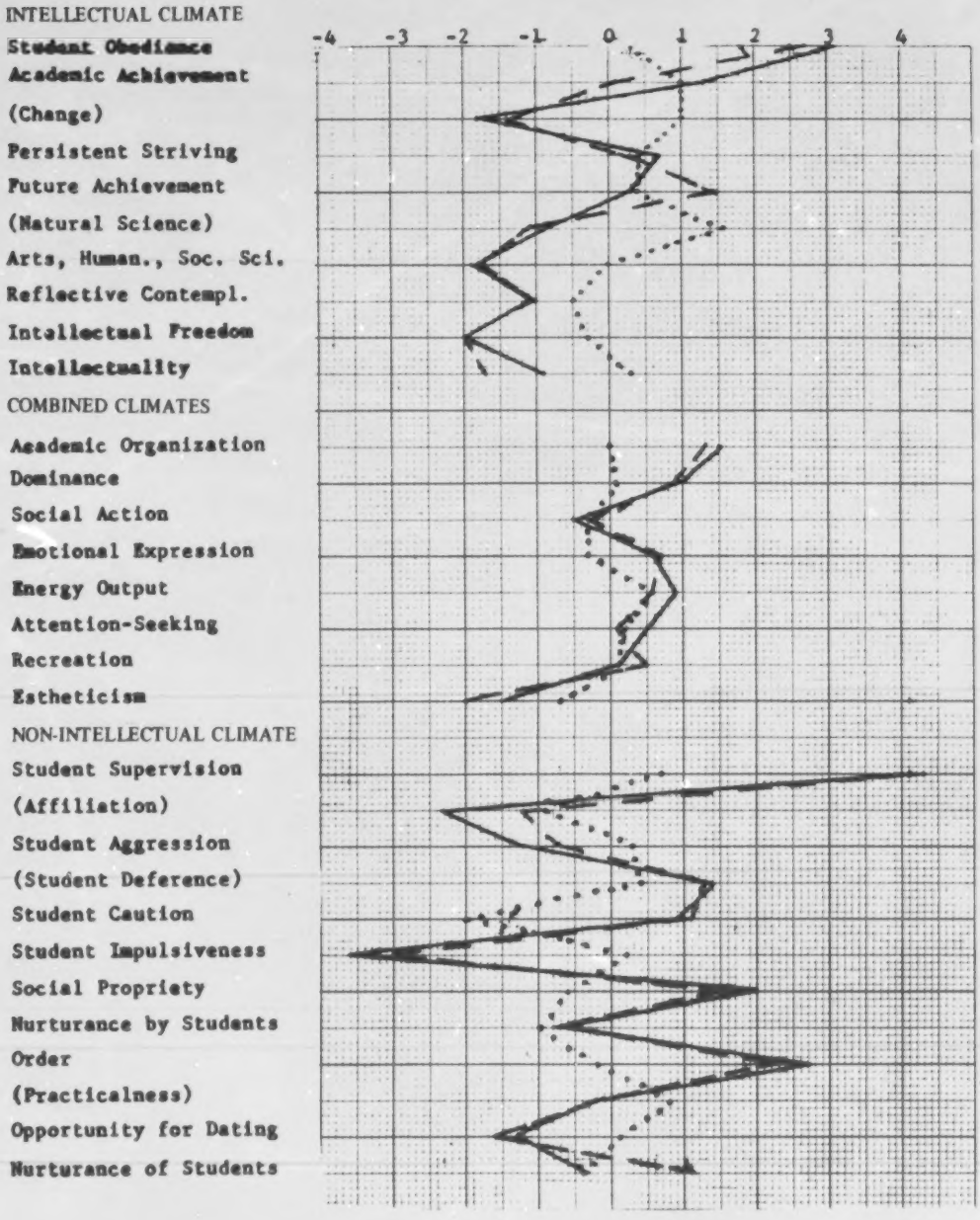
Careful examination of chart 4 shows the scale profile for Military Academy freshmen and seniors was very similar--in fact, the correlation between the 30 scale scores for the two cadet groups was very high (.94)--indicating a rather stable view of the academy. The correlation of scale scores for first classmen with those for the engineering students was insignificant (.03). In addition, the correlation of first classmen's scale means with those of students from seven universities was only .23 and with students from seven liberal arts colleges was an inverse and substantial correlation of -.57. The sharpest differences between the Military Academy and the colleges which made up the standardization group are that the Academy places much greater stress on academic achievement, in loco parentis orientation, and order. Conversely, less emphasis is placed on spontaneity and affiliation among students and with the faculty.

The third study (Morgovsky, 1969) employed measures of both the strength of certain psychological needs experienced by cadets and of the conditions that represent the environmental climate or atmosphere which facilitate or inhibit the expression of those needs. The latter measures were obtained

CHART 4

COLLEGE CHARACTERISTICS INDEX SCALE SCORE PROFILES
FOR THE TWO STUDENT CLASSES AND FOUR ENGINEERING COLLEGES

STANDARD SCORES (Mean = 0, Standard Deviation = 2)



from the Occupational Climate Index, which parallels the CCI but is more general in its item content. The former measures--of psychological needs--were obtained from the Activities Index which consists of 300 items divided into 30 scales, each designed to measure a specific psychological need: for example, the needs for achievement, dominance, and deference.

During 1967, the Activities Index was administered to 874 second class cadets from the Class of 1969 and the Climate Index was administered to 482 second classmen from the Class of 1968. Analysis of the data revealed, according to the report author, the "U.S. Military Academy and its cadets as being out of step with each other" (Morgovsky, 1969: 8). For 29 of the 30 scales on the two instruments, statistically significant differences were found between cadet needs and the perceived environmental opportunities or demands to express those needs. On four of the five scales where differences were the largest, the cadets perceived that the Academy environment demanded a greater degree of the need than they possessed.

In terms of the most significant "environment-need" differences, the cadets perceived the environment as demanding more of the following than they actually felt or possessed: (1) fearfulness, withdrawal, or excessive caution in situations that might result in physical pain, injury, or death; (2) self-centeredness, vanity, egotism, and preoccupation with self; (3) self-depreciation and self-devaluation as reflected in the ready acknowledgement of inadequacy, ineptitude, or inferiority, and the acceptance of humiliation and other forms of self-degradation; and (4) acceptance of criticism, advice, or humiliation publicly. On the other hand, the cadets saw themselves having a higher need for detached, nonmagical, unprejudiced, impersonal thinking, while the Academy environment was seen as pressing for autistic, irrational, paranoid, or otherwise egocentric perceptions and beliefs. 1/

Student housing

The type of housing that students live in may be related to attrition, although only one study (USMA; Burris; 1968) looked at the topic. The Military Academy had two types of student housing: (1) a horizontal style, with students living along a long hallway, and (2) vertical style, with rooms centralized around a common stairwell. Those students from

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1/Scale definitions are taken from Stern (1970).

horizontal housing had a higher probability of resigning than did those from vertical housing. It was found that resignees in general and those from horizontal housing in particular are less positively influenced by other students, less apt to relate with others, do not feel part of the student group and are unable or unwilling to ask other students for help. The horizontal housing resignee appears to be driven to resignation, partially as a result of the poor relationships that he has established with peers and the isolation he feels due to these poor relationships.

Reasons for resignation

Based on an analysis of questionnaires and interviews, Burris (1968) felt able to group reasons for resignation into five broad categories, as shown in table 20. From this, he concluded that the:

> Reasons for resignation vary considerably. The data from this study indicated that personal weaknesses and preoccupations with failure on the part of the resignees themselves were probably the greatest causes of resignations. Of the environmental causative factors, the academic programs appeared to be the single most important area identified by resignees and also most often brought out by interviews. Academic complaints ran from one extreme to another but seemed to center around the 'lack of choices' and the restrictions and limitations of courses and curriculum offerings. The category of 'career goals' did not appear to be as significant in bringing about resignations as would be expected. No one reason can completely explain the resignation of even one cadet. (p. 2)

TABLE 20

THE CATEGORIES OF RESIGNATIONS AS PERCEIVED BY THE CADET COUNSELOR AFTER INTERVIEWS WITH RESIGNEES, ANALYSIS OF RESIGNEE QUESTIONNAIRE RESPONSES, AND REVIEW OF OVERALL RECORDS OF RESIGNEES IN A VARIETY OF ACADEMY PROGRAMS.

Broad categories of resignations	Sub-categories if applicable	Category percent of total	Sub-category percent of total
Academics		27.7	
	1) Insufficient choice of academic courses		15.3
	2) Instructional methods		2.3
	3) Pressure of system		6.4
	4) Competition		3.7
Environmental adjustment		37.5	
	1) 4 System		12.1
	2) Regimentation		3.6
	3) Lack of freedom		2.2
	4) Pressure (schedule, ranking, competition)		3.1
	5) Group adjustment (unwilling or unable)		16.5
Career goals		12.9	
	1) Insufficient desire		4.5
	2) Always desired other career		3.6
	3) Changed career interests		4.9
Honor		16.1	
Other		5.8	
	1) Marriage		4.5
	2) Personal or unclassified		1.3

Source: Burris, 1968.

COAST GUARD STUDY

The Coast Guard Academy participated in an American Council on Education (ACE) study designed to assess the impact of colleges on students of the Class of 1970 (Williams et al., 1973). Members of that class were administered ACE's Student Information Form as entering freshmen and were re-administered it 4 years later as seniors. Using a residualized-regression approach, freshmen responses were used to estimate senior responses, and the difference between the actual and estimated senior responses was considered to be the Academy impact. In evaluating the results of this study--presented in table 21--it must be remembered that the estimated senior scores are a function of the group of institutions in the study, many of which may not be comparable to the Coast Guard Academy in certain respects.

TABLE 21

ACADEMY IMPACT UPON DISSATISFACTION WITH SELECTED ASPECTS OF COLLEGE LIFE COAST GUARD ACADEMY CLASS OF 1970

Area of dissatisfaction	Actual	Estimated	Academy impact
Facilities for library research	40	14	+26
Variety of courses in the humanities	33	10	+23
Opportunities for undergraduate research	18	12	+6
Variety of science courses	14	6	+8
Quality of instruction in the humanities	14	6	+8
Opportunities for extracurricular science activities and projects	12	10	+2
Science equipment and facilities	10	6	+4
Overall rating of the college	10	6	+4
Undergraduate training as preparation for future career	2	12	-10
Opportunities for discussion of work with professors in major field	7	8	-1

Source: Williams et al., 1973: 11.

Although those desiring a military career dropped from 73 to 42 percent from freshman to senior year, this was better than the estimated drop, resulting in a positive Academy influence. The Academy also had a positive impact on the number of engineering majors and business majors, the number desiring a master's degree and the number of those retaining a religious preference. The Academy has a negative impact on the number of social science majors and the number desiring a doctorate degree.

Table 21 shows the actual percentage of seniors who were dissatisfied with various aspects of the Academy. A positive impact indicates more dissatisfaction than expected from national norms. Table 22 is similar to the previous table, except that it deals with perceived (by the seniors) insufficiencies (by the seniors) in the Academy.

The study points out that some of the above areas of dissatisfaction or insufficiency have been corrected since the Class of 1970 graduated.

TABLE 22

ACADEMY IMPACT UPON AREAS OF INSUFFICIENCY
COAST GUARD ACADEMY CLASS OF 1970

Area of insufficiency	Actual	Estimated	Academy impact
Personal contacts with family	64	38	+26
Freedom in course selection	49	25	+24
Outlets for creative activities	41	29	+12
Social life	40	27	+13
Advice and guidance from faculty and staff	12	20	-8
Work required in courses	10	10	0
Personal contacts with faculty	4	20	-16
Personal contacts with classmates	0	8	-8

Source: Williams et al., 1973: 12.

In view of the Academy's attrition rate--as shown in table 23--the study concluded that the problem of military services for today's youth is at the core of the attrition problem. Furthermore, the constraints of a system of military discipline are increasingly difficult for today's college student to accept.

TABLE 23

ACADEMY IMPACT ON PERSISTENCE IN COLLEGE
COAST GUARD ACADEMY CLASS OF 1970

	Percentages		
	Actual	Estimated	Academy impact
Returned for second year	66.5	86.4	-19.9
Graduated on schedule	48.4	61.2	-12.8
Graduated	53.9	72.7	-18.8

Source: Williams et al., 1973: 13.

INDIVIDUAL-ENVIRONMENT INTERACTION

After reviewing the results of 40 years of research concerned with the impact of colleges on their students, Feldman and Newcomb (1969) conclude that there is "a tendency for students incongruent with the specific college to be more dissatisfied with their experiences at the college and to be more likely to consider leaving and actually to leave" (p. 293). However, individual characteristics may interact in different ways with different environments. They quote Meyer and Bowers (1965) as saying:

> This lack of clear-cut differences between the dropouts and those who stay and particularly the discrepant findings in various studies strongly suggest that the effect of these variables is dependent on the nature of the college social environment and that the same variable will be associated with different outcomes in different contexts. In short, the previous research on dropout points to the importance of considering the 'fit' between the climate of the college and the kinds of students who find their way there. We submit that the failure to investigate the determinants of attrition in different social milieux in past studies has resulted in the present inability to identify the sources of attrition. Until we know something about the opportunities and rewards that a college offers in relation to the goals and desires of the students it recruits, we will remain ignorant of the causes of dropout. (p. 6)

The following sections discuss three aspects of individual-environment interaction.

Accuracy of expectations

The accuracy of a student's expectations and its relationship to attrition has been looked at in several studies. According to a recent review (Porter & Steers, 1973), each individual has a unique set of expectations of the organization he is about to enter and it is the degree to which this set of expectations is met that will determine whether the individual will remain in the organization.

Several of the studies on expectation make the implicit assumption that the more information the Academy sends to its entering students, the more knowledgeable they will be. This assumption may be false if the student never reads the additional information. This problem will be discussed in more detail in discussing the "Hawthorne Effect." (See p. 73.)

Close to one-fourth of all those who left the Air Force Academy between July 1971 and June 1973 thought that the information that they received from the Academy was inaccurate and incomplete according to the exit interviews (Short, 1973). More than one-half found it accurate but not complete.

A Military Academy study (Kintz, 1967) found that 38 percent of the graduating Class of 1967 would have liked additional information about the Academy prior to admission and 13 percent stated that they received misinformation. These groups did not differ from the rest of the class on two measures of performance. However, there was more of a tendency for those receiving misinformation or desiring more information to have had a decreased commitment to a military career than was true for their classmates.

Experimental studies

Macedonia (1969) sought to answer three questions with an experiment testing the accuracy of the expectations of the Military Academy Class of 1971. He randomly divided all those authorized for admission into an experimental group of 500 students who received a booklet--"The Challenge"--giving a realistic description of the Academy environment, (based on the College Characteristics Index research discussed earlier) and a control group of 760 students who did not receive the booklet. He sought to find if (1) receiving the booklet had an effect on motivational attrition, (2) sending the booklet would be detrimental to recruitment, and (3) receiving the booklet could affect military performance.

Using chi-square analysis, Macedonia found that those receiving the booklet had a lower first-year motivational attrition rate ($p<.05$); were more likely to accept their nominations ($p<.05$); and had lower military performance ratings, although the significance was not great ($p<.10$). Control group resignees and experimental group resignees were also tested on 10 different background characteristics. The only significant difference discovered (at the .05 level) was that of academic ability. However, in testing 46 hypotheses at the 5-percent significance level, it can be expected by chance alone to have 2 significant differences. Macedonia therefore concluded that none of the background characteristics affected the results of his three basic findings.

A partial replication of the Macedonia study was done on the Class of 1975 by Ilgen, Seely and Eggert (1971). They distributed a revised version of "The Challenge" booklet to a randomly selected one-fifth of the candidates who had accepted appointment by June 1, 1971. Of these, 234 actually entered the Academy. They were matched with a control group of entering students who had not received the booklet.

The results show that almost twice as many of those who did not receive the booklet resigned during the first summer, a difference that was significant at the 5-percent level. However, soon after entry, the expectations, beliefs, and attitudes of all students were measured. No differences were found between the experimental and control groups. The authors conclude that although the booklet does tend to reduce resignations, neither this study nor the Macedonia study can say why it worked.

One possible explanation is the "Hawthorne Effect," which results when a change in behavior of the experimental group relative to the control group is caused solely by the added attention the experimental group receives and not because of the treatment. Ilgen et al. (1971) dismiss the Hawthorne Effect as a cause of their findings, because they felt that receiving one additional booklet, out of the large amount of information that all candidates receive, is probably insignificant. The authors further hypothesize that the booklet's frank approach could have inspired trust of the Academy in the candidate, which in turn was the cause of the behavior. The authors concluded, nonetheless, that the probable cause was that expectations really were different but were inadequately tested.

A comprehensive study is currently underway at the Air Force Academy (Westen, 1975) on the Class of 1978 to assess the effects of different methods of presenting information

about the Academy. Using a multistage, random-sampling approach, some qualified candidates were asked to go to various Air Force bases for an interview and others were given a booklet similar to "The Challenge." The purpose of the interview was to further evaluate the candidate and to give him more accurate expectations of the Academy. A questionnaire was later sent to 500 of the 1,650 "probable" members of the class asking them where they got most of their information about the Academy. Combining the results of the interview experiment with the results of the questionnaire led to the conclusion that the interview may have improved expectations, but not by much. However, those who went to the interviews had higher than average appointment acceptance rates and lower than average attrition rates. Furthermore, those who were asked to go to an interview, and did not, but accepted their appointments had a lower than average attrition rate. The author hypothesized that the important feature of the interview was the attention paid to the individuals by the Academy (the Hawthorne Effect). The individuals selected for the interviews were thus favorably disposed to the Academy and went out of their way to help the Academy (hence, higher acceptance and retention rates). Comparative results for those who received the booklets are not available at this time.

Relation of performance to attrition

Although few studies have been conducted in this area, there does appear to be some relation between academy performance and attrition.

The Military Academy made a study (Burris, 1968) of all resignees (except those for honor violations) from the classes of 1969 and 1970 who left between January 1967 and June 1968. About 69 percent of these resignees were in the bottom half of the academic standings for their combined classes. Similarly, 75 percent were in the bottom half in military aptitude standing.

A Naval Academy study (Howland, 1971b) of the classes of 1970-73 shows that those students who attained an "A" average on their first-year Naval aptitude ratings were more likely to be retained than those with a "C" average.

Personality-environmental demands congruence

Only two academy studies have examined the conflict that sometimes occurs between individuals and the environment they inhabit. Medsger (1971b) performed a cluster analysis on responses by a group of leavers from the Military Academy Class of 1971 who responded (36 percent of total) to questions

about reasons for leaving. He formed six classifications of reasons for leaving and obtained the percent of the leavers in each cluster. Included among these six were "Student-Environment Discordance" (22 percent) and "Inability" (10 percent).

In a comprehensive study designed to identify correlates of attrition and then to test competing causal models of attrition, Rootman (1970) found several personality-environment interactions to be related to attrition for the Coast Guard Academy Class of 1972. The following paragraphs describe his findings as related to individual personality characteristics, social relationships, "morphology," and role performance. The final paragraphs describe how Rootman used some of these findings in constructing a model to explain the attrition phenomenon.

With regard to personality characteristics, Rootman found that those who were interested in English and other languages and more interested in mathematics or physics and chemistry were less likely to be first-year voluntary losses. Additionally, those who decided to major in engineering, science, or math were less likely to voluntarily leave during the first year than were those majoring in health or humanities. Moreover, those most dissatisfied, 2 weeks after entry, with Academy life in general, popularity among classmates, quality of course instruction, the Fourth Class System, and the intellectual level of courses were most likely to be first-year voluntary leavers. Furthermore, the better adjusted the students perceived themselves to be, 1 day and 2 weeks after entry, and the less "out of place" they felt, the less likely they would be to voluntarily leave during their first year.

Rootman also examined the social relationships first-year voluntary leavers had with people at the Academy. Although an individual's attachment to others may be of little importance in his success at the Academy, Rootman found that actual sociometric choices by others was certainly a factor in attrition. The more an individual is liked and accepted by his peers, 2 weeks after arrival, the less likely he is to be a first-year voluntary leaver.

An individual's perceived relationship with others may also be an important factor in attrition, but only one of Rootman's three measures yielded significant results--that is the better an individual perceived he was getting along with others, the more likely he was to stay through the first year. The other two measures (does the individual feel he has enough close friends at the Academy and does he feel fully accepted by the other men in his section) may not have been significant, according to the author, because of the tendency to give socially acceptable responses.

With regard to morphological characteristics of the environment--the spatial-temporal arrangement of individuals and the physical size of groups--Rootman found only one of the six he investigated to be significantly correlated with attrition. Students are usually placed in a section at arrival and remain in that section throughout their first summer. However, during the summer of 1968 (Rootman's primary period of data collection) some students were resectioned, primarily because the Academy wanted nonswimmers to be in special sections so that they could learn to swim. Rootman found that those who changed sections were more likely to be first-year voluntary leavers than were others.

Finally, with respect to role performance, Rootman found that those students who received unsatisfactory performance ratings, who had no recorded delinquencies during the first half of the first summer, who had low adaptability ratings, and who were less certain they "have what it takes," were more likely to be first-year voluntary leavers.

Three causal models were constructed using the results of these bivariate analyses just described. Using stepwise multiple regression Rootman found eight variables to explain first-year voluntary withdrawal:

1. Personality, measured by the Autonomy scale of the EPPS;

2. Actual attachment from "insiders," measured by the proportion of "likes" received from sectionmates 2 weeks after arrival at the Academy;

3. Relationships with "outsiders," measured by the number of "outsiders" with whom the individual discussed leaving in first 2 weeks at the Academy;

4. Relationships with "insiders," measured by the number of "insiders" with whom the individual discussed leaving in first 2 weeks;

5. Section change, measured by whether or not the individual was placed in a new section at the end of the first week;

6. Interests, measured by expressed interest in foreign languages;

7. Perceived attachment from "insiders," measured by the degree to which the individual felt he was "getting along with others" 2 weeks after arrival at the Academy; and

8. Values, measured by the extent to which a "chance to exercise leadership" is important to the individual in his choice of an "ideal" career or job.

Rootman combined three of these variables into a single index without a significant loss in the multiple correlation coefficient (.475 vs. .465). The variables of "Personality," "Interests," and "Values" appeared to deal with personal interaction with the environment. Those students who sought autonomy, who were interested in foreign languages and who did not value leadership were thought to be at odds with an environment stressing leadership and technical training, with emphasis on group cohesiveness. The new variable was combined with the other five, resulting in six independent variables: (1) person-role fit; (2) actual interpersonal fit; (3) perceived interpersonal fit; (4) discussion of leaving with "outsiders"; (5) discussion of leaving with "insiders"; and (6) section change. The dependent variable was first-year voluntary withdrawal.

Using the Simon-Blalock method of vanishing partial-correlations, Rootman concludes that the model of attrition which best fits the data:

> Suggests that voluntary withdrawal is caused directly by the degree of 'actual interpersonal fit' of the individual, and both directly and indirectly by the degree of 'person-role fit' of the individual, both of which are independent of one another. Further, it suggests that one possible determinant of 'actual interpersonal fit' is whether or not the individual is removed from the group with which he begins his socialization experience. It also suggests that the degree of 'person-role fit' causes discussion of leaving with 'outsiders,' both directly, and indirectly through 'perceived interpersonal fit.' 'Discussion of leaving with 'outsiders' in turn causes voluntary withdrawal both directly and indirectly through discussion of leaving with 'insiders.'
>
> In other words, whether or not an individual will survive in a military academy for a year is largely a function of the degree to which his own properties 'fit' the role of cadet at the entry and the degree to which he 'fits' the group with which he is socialized. (p. 154)

CHAPTER 7

THE ENVIRONMENT AS SEEN BY OTHERS

The five publications discussed in this chapter are different from the other studies in this enclosure in that they were all done by "participant observation"--that is, they are accounts of the experiences and observations of people who are or were associated with the academy--and, with one exception, they were not done by or at the request of the academies but rather were about the academies.

Participant observation places minimal constraints on the system being studied so as to see it as it really is (Hyman, 1964). There are advantages and disadvantages to this method. One disadvantage of participant observation is that what the researcher observes and interprets is partially due to his own behavior and the response of others to that behavior. Moreover, since the researcher is a participant as well as an observer, his objectivity is questionable (Averch et al., 1972). Another disadvantage is that the data are often difficult to reproduce and violates standards of specificity and standardization of observational procedure.

Participant observation has one major advantage, as pointed out by Hyman (1964: 46):

> It can be very important for originating and setting up problems for later stages of inquiry. The very feature that makes such observational procedures inadequate for providing scientific data probably accounts for their success in raising questions and providing creative ideas for guiding later inquiry. The success of such observation, then, depends not on the specific data it produces, but rather on the questions it raises. It is when we start gathering facts specifically oriented to answering these questions that we provide data for the scientific body of knowledge. For later stages of research and for evaluating questions raised by earlier stages, then, we have to employ observational procedures that are more standardized and that place more constraints on what can be observed.

The five participant observation studies to be discussed are: Ivory Fortress, A Psychiatrist Looks at West Point, by Richard U'ren, M.D., (1974); The Brass Factories, by J. Arthus Heise (1969); School for Solders,

by Joseph Ellis and Robert Moore (1974); The Cadet Phase of the Professional Socialization of the West Pointer: Description, Analysis, and Theoretical Refinement, by John Lovell (1962); and Recommendations of the Corps of Midshipmen (USMMA, 1969).

U'ren was chief of psychiatry at the Military Academy from 1970 to 1972. The bases of his observations are studies by the Academy's Office of Institutional Research, psychiatric interviews with over 100 cadets, and indepth interviews with 15 students and 18 officers. Heise was an assistant librarian at the Air Force Academy who complied the information in his book by talking with an unspecified number of officers, civilian faculty members, and students, as well as looking at official records at each of the academies. Ellis and Moore were members of the Military Academy faculty who. as did U'ren and Heise, obtained the bulk of their material from Academy records and interviews with students and officers. Lovell is a graduate of the Military Academy and, while most of his study is concerned with student socialization, the part to be discussed here concerns his reflections on the origins of the Military Academy's system of training. The Merchant Marine Academy study was done at the request of the Superintendent by unspecified members of the Regiment of Midshipmen. The opinions allegedly reflect those of the entire Regiment, but the method of obtaining these opinions is not mentioned.

THE THAYER SYSTEM

The Military Academy's system of training is known as the Thayer System, named for the Superintendent of the Military Academy from 1817 to 1833. Thayer set up a system with emphasis on small classes, sectioned according to ability; frequent testing; daily recitation; discipline; neatness; and good conduct. The founders of the other four Federal academies used the Thayer System as a guide in establishing their own training systems. Although modifications have been made over the years, many aspects of the System are still present in the training systems at all the academies.

The five studies deal mainly with the Thayer System and, more specifically, with the academic system, the military training program, and the honor system.

The origins of the Thayer System

Lovell argues, in his dissertation, that the Thayer System is based on the philosophy of Plato. He does not

attempt to relate Plato to Thayer directly, but rather discusses some of Plato's thoughts and then the principles upon which the Thayer System is based.

Plato, according to Lovell, believed that, for every perceived object, there exists in reality an "ideal" form of the object which is its essence. Since reality and the soul are forever linked, one can perceive reality only when he is able to examine his soul well enough to obtain the knowledge that was always there.

Plato, with this in mind, set forth his plan for educating those few with the potentiality for guardianship of the State. As Lovell explains:

> Potential guardians are selected at an early age, and then isolated from the corrupting influences of society. They subsequently live together in Spartan simplicity, deriving their satisfaction not from personal property, but from the identity of their own interests with those of the state. Great attention is paid to both physical and mental education, for both are seen as vital to the development of 'harmony' of the soul. Among specific academic subjects, at the level of higher education, Plato emphasizes the importance of mathematics, which he regards as peculiarly indispensable, 'since it forces the mind to arrive at pure truth by the exercise of pure thought.' After years of mathematical training, the guardian is exposed to the final exercise of logical reasoning, which Plato calls the 'Dialetic.' From this final exercise will come recognition of the essential harmony and order of the universe, and knowledge of 'the Good,' which are the ultimate elements of knowledge, that a ruler requires. (pp. 26 and 27)

Lovell claims that the Thayer System is based on three principles, the first being "organic unity." The essential purpose of a military academy is to produce career military officers. To obtain this goal, the academy student must learn "to regard the meaning of his own life as derivative from his participation in a cause greater than his own" (p. 31), the cause being military service. A student obtains this learning only after being carefully selected, thoroughly taught the ideals of service in the military, and protected from outside influences that could tempt him away from the goal.

The three concepts of the Military Academy motto "Duty, Honor, Country," are based on this first principle. All students are taught to be strictly subordinate and loyal to the Nation. Dishonor in one member of their group is interpreted by the others as a reflection on their own honor. Duty requires discipline and, like honor, is a responsibility of the student, in keeping with his devotion to the common group goal.

The second principle underlying the Thayer System is the idea that "essences" such as "mission," "duty," "honor," and so forth, are real rather than abstract. This principle finds particular application in the military training program in which students are taught that mastering certain qualities (decisiveness, initiative, etc.) will make them successful military leaders.

The third principle is related to the second. Since many of the desired qualities are real, they can be attained, but only through disciplined effort. Memorization and mathematics are the essential tools of the deductive reasoning process needed to attain the desired qualities (pp. 25 to 36).

ACADEMIC SYSTEM

Heise criticized several aspects of the academic program. The academies emphasize competition in academic performance. Because of this, the academies have often given the same examination to all sections of the same course, and frequently will change the student's section so that he is with others who are performing at the same level. Heise claims that the standardized examinations given at different times has been, and could be in the future, a cause of cheating. The frequent rescheduling does not promote good student-teacher relationships and is demotivating to the student who is continually placed in sections with poor performers. The grade competition has also caused some well-meaning instructors to give strong hints to their students as to what will be on the next test.

Heise also claims that the heavy demand on the student's time interferes with sleep and study, causing them to come to class tired and ill-prepared. U'ren criticizes the lack of time students have for academics. Because of this they do only enough work to get by (those who do more are usually looked upon with disfavor by their classmates), and rarely have time to actually think about what they are being taught. Memorization becomes important. Ellis and Moore also talk about the demands on a student's time and its effect on

his academic education, but quote an officer as saying that, after all, the academies exist to produce military officers, and not physicists.

The Merchant Marine Academy study claims that the heavy academic course load causes students to sacrifice learning to cramming and memorization. Therefore, grades are not relevant to what he is supposed to have learned.

MILITARY TRAINING PROGRAM

U'ren is critical of the lack of reponsibility given to students and the attention payed to detail. He suggests that the Military Academy produces good followers and not good leaders. Heise criticizes the disciplinary system (a part of the military training program) as being too rigid. Heise is also critical of the military training officers who appear to be too regulation-oriented. If students cannot respect their military training officers, it can affect their opinion of the military service. The Merchant Marine Academy study claims that disciplinary violations are ambiguous and obsolete. Furthermore, student leaders are given no real responsibility and all students, especially upperclassmen, are not treated in a manner reflecting their maturity.

HONOR SYSTEM

The concept of honor is highly regarded at each of the academies. The Air Force and Military Academies have honor codes whereby students promise not to lie, cheat, steal, or tolerate those who do. The Naval Academy has an honor concept whereby students will be "truthful, trustworthy, honest and forthright at all times and under all circumstances." The Merchant Marine and Coast Guard Academies also have honor concepts similar to the Naval Academy. Honor violations usually result in expulsion from the Academy. Table 24 shows the percentage of each class over the last several years who left for honor violations.

TABLE 24

HONOR ATTRITION FROM THREE ACADEMIES
CLASSES OF 1959-75

Class(es)	USMA	USNA	USAFA
1959-1963	2.1	2.2	3.8
1964-1968	3.6	2.6	8.2
1969	2.4	1.1	3.3
1970	3.4	1.6	1.9
1971	3.6	0.9	3.2
1972	3.4	0.5	2.7
1973*	1.9	1.0	4.6
1974*	2.2	0.4	1.6
1975*	1.3	0.6	0.7

*As of June 30, 1972.

The participant observers are somewnat critical of certain aspects of the honor system. Heise quotes an Air Force Academy chaplain as saying that it seems strange that a student can break the code (and thus be expelled) by failing to pay for a soft drink, but does not break the code by doing many more scandalous actions. The chaplain goes on to say that an Academy graduate is no more moral than a graduate of any other school. U'ren reports that many students would not report a friend for a honor violation. Those who are most likely to get reported are the misfits or those who cheat in the classroom or in athletics, thus getting an unfair advantage over their peers. The author also reports that it is not always clear as to what is cheating (a violation of the code) and what is merely a violation of academy regulations (which usually carry lesser penalties). Because of this confusion, ethics and honor are often different. This can lead, in combination with the value placed on loyalty, to the belief held by many students and graduates, that what is good for their group is honorable, regardless of whether it is moral. Ellis and Moore have found that duty and honor are often equated by academy students and graduates. If a superior gives a man an order that conflicts with the man's honor, he has the choice of sacrificing his honor or his career, or he can avoid the conflict if he equates duty with honor. The authors also report, as did U'ren, that the difference between the honor code and the regulations has become confused, thus tending to kill the spirit of the code.

CHAPTER 8

SUMMARY AND IMPRESSIONS

We identified and collected a large number of studies potentially relevant to answering the question of why students leave the Federal service academies before graduating. Prior chapters reviewed 87 of the most recently completed and directly relevant of those studies. Examination of the studies and other documents left us with a number of impressions about limitations in the available studies of student attrition from the academies, about what we know of the causes of that attrition, and about the implications for future research in this area. The most salient of these impressions are summarized in the following paragraphs.

LIMITATIONS OF AVAILABLE STUDIES

We feel that the most serious limitation in the available studies on academy attrition is their narrow focus. Most studies done by the academies have examined characteristics of the students which might be related to attrition. Few have attempted to determine what effect, if any, the academy environment or nonacademy factors have on a student's decision to leave. Of those which did, even fewer were properly designed so that causal or even correlative relationships between attrition and the environment could be reasonably inferred. Moreover, we believe that basic understanding of the attrition phenomena requires that it be viewed as resulting not from the academy environment alone or from characteristics of the students alone, but rather from an interaction of the two. We found only one study which was specifically designed with this interaction hypothesis in mind.

The limited focus on the environment appears to be due to organizational arrangements for conducting research. Almost all the studies we reviewed were done by staff research groups, at the Military Academy and the Air Force Academy, manned by personnel--trained in the behavioral and social sciences and/or with an analytical and experimental background--who have had limited charters in terms of areas in which they have been permitted to conduct their studies. Environmental research, on the other hand, appears to be under the cognizance of line operations groups who--for the most part--either do not have the expertise or the time to conduct and report on formal research.

WHAT WE KNOW ABOUT ATTRITION

Keeping in mind the narrow focus, and several other limitations mentioned in the introductory chapter, we feel that the current status of knowledge about academy attrition derived from previous research can be described by the following propositions:

Proposition 1: No one reason can completely explain the resignation of even one cadet.

Proposition 2: There is a slight, but fairly consistent, tendency for those with lower ability at entry to have a higher probability of leaving (1) regardless of reason and (2) specifically for academic reasons.

Proposition 2a: Voluntary resignees have the same abilities at entry as those who stay.

Proposition 3: There is a slight, but again consistent, tendency for voluntary resignees--in comparison with those who stay--to be low in psychological needs for achievement and deference to authority, but high in needs for autonomy and affiliation.

Proposition 4: The overall psychological environment of at least one academy can best be described as one which emphasizes obedience to authority, resistance to change, and deemphasizes student freedom, privacy, spontaneity, and joviality.

Proposition 4a: At the same academy, current students perceived the environment as demanding more of certain characteristics than they possessed. These characteristics were related to suspicion, vanity, fearfulness, self-depreciation, and acceptance of criticism.

Proposition 5: Again at the same academy, those who leave early tend to see less opportunity to make their own decisions, study, have a sense of belonging, and make lasting friendships.

While propositions 2 through 5 may seen sufficient to explain attrition (and thus contradict proposition 1), they are in fact only suggestive and indicate the need for further research. For instance, the reason that those with lower ability at entry only tend to have a greater probability of attrition may be that some, but not all of them, possess certain abilities or characteristics which may have led to reduced academic loads or special tutorials, thus compensating for their lower ability. Also, the combination of

propositions 3 through 5 may seem intuitively to explain voluntary attrition. However, the description of the academy environment, referred to in proposition 4, was obtained from current students; those who dropped out might have described it differently or might have felt they possessed even fewer of the characteristics demanded. Moreover, these descriptions were obtained for only one academy and thus their general applicability is questionable.

IMPLICATIONS FOR FURTHER RESEARCH

Despite the large number of studies that have been conducted on academy attrition, there still remain many large gaps in understanding this phenomenon. We believe those gaps might be reduced through the following six actions. First, more scientific research should be conducted on the academy environment and its effects on students, both in terms of their dropping out and their subsequent performance and retention in the service after graduation. Second, the group(s) conducting the research should be affectively outside the direct control of top academy officials so as to insure an unbiased and independent examination of the environment. Third, to insure maximum utility of that research it should be conducted periodically and at all the academies simultaneously. Fourth, the concept of interactions should be investigated more thoroughly. Fifth, the effect of planned variations in the academies' environments and in their input should be evaluated. Sixth, some objective method of assessing the quality of dropouts should be established.

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In order to shorten this bibliography, the following abbreviations have been used for each of the academies and the offices which conducted or sponsored the cited studies.

USAFA - United States Air Force Academy; Colorado Springs, Colordo

USCGA - United States Coast Guard Academy; New London, Connecticut

USMA - United States Military Academy; West Point, New York

USMMA - United States Merchant Marine Academy; Kings Point, New York

USNA - United States Naval Academy; Annapolis, Maryland

DFLS - Department of Life and Behavioral Sciences, USAFA

MP&L - Department of Military Psychology and Leadership, USMA

OIR - Office of Institutional Research USMA

RRE - Director of Evaluation, Office of Admissions and Registrar, USAFA

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DETAILED ABSTRACTS (note a)

ACADEMY; AUTHOR; DATE:	USNA; Abrahams and Neuman; 1973.	USMA; Bridges; 1967.	USMA; Bridges; 1969.	USMA; Bridges; 1972a.
PURPOSE OF STUDY:	To examine SVIB as predictor of military aptitude and disenrollment.	To investigate the motivational impact of family pressure to attend USMA on cadet performance.	To analyze trends in changes in expressed military career commitment of students in successive years.	To determine the usefu Rokeach Value Scales f values of USMA candida and Army officers.
SAMPLE SIZE AND CLASS YEAR:	2707 - Classes of 1971-72	573 - Class of 1967	Classes of 1967, 1969-72	Classes of 1972-75
DATE DATA COLLECTED:	First week	May 11, 1967	Mostly September 1968	Various times
SOURCE OF DATA:	SVIB administered to students.	Questionnaire, performance records.	Questionnaires, commitment scores.	Rokeach Value Scale r attrition data.
METHOD OF ANALYSIS:	Regression analysis and tabular presentation of percentages.	Tabular presentation of results.	Tabular and graphical presentation of results.	Statistical analysis o
CONCLUSIONS:	SVIB is a valid predictor of academy success.	Family pressure to come to the Academy is not related to a student's performance at the Academy, unless he wants to resign.	Students enter with a relatively high career commitment, it decreases until the beginning of the third year, remains stable until graduation. Graduation commitment starts high and increases after first year.	The RVS is sensitive useful comparisons of groups and to identify values over time.

ACADEMY; AUTHOR; DATE:	USMA; Bridges; 1972b.	USMA; Burris; 1968.	USMA; Butler; 1973.	USMA; Butler; 1974.
PURPOSE OF STUDY:	To determine reasons for decliners securing a nomination, completing the qualification process, and then rejecting their appointment.	To examine the characteristics of resignees.	To determine efficiency of the five academic admissions scores in predicted cumulative academic performance.	To identify reasons f given by resignees an
SAMPLE SIZE AND CLASS YEAR:	1929 - Candidates for Class of 1973.	246 resignees - Classes of 1969-71.	1463 - Classes of 1970-71.	530 - Classes of 1973
DATE DATA COLLECTED:	July and October, 1969.	Not reported.	Not reported.	Not reported.
SOURCE OF DATA:	Primarily a questionnaire, but records and previous findings were also used.	Questionnaires, interviews, performance records.	Admissions and performance records.	Personnel records.
METHOD OF ANALYSIS:	Tabular presentation of results with chi-square and F-tests of significant differences.	Tabular presentation of results with chi-square tests of significance.	Stepwise multiple regression with T-tests and Z-tests used to determine significance.	Tabular presentation
CONCLUSIONS:	Being accepted at preferred school or for military or educational considerations were the primary reasons for declination of appointments or dropping candidacy.	Resignees felt they did not fit at the Academy and lacked confidence in their ability to handle responsibility and leadership of others.	High School rank and mathematical achievement scores were the best predictors of academic performance.	Officers more often t that the reason for a nation was personal p officer material).

a/ There are six studies which are not in proper order that may be found at the end.

DETAILED ABSTRACTS (note a)

rahams and Neuman; 1973.	USMA; Bridges; 1967.	USMA; Bridges; 1969.	USMA; Bridges; 1972a.
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a valid predictor of success.	Family pressure to come to the Academy is not related to a student's performance at the Academy, unless he wants to resign.	Students enter with a relatively high career commitment, it decreases until the beginning of the third year, remains stable until graduation. Graduation commitment starts high and increases after first year.	The RVS is sensitive enough to yield useful comparisons of various USMA groups and to identify changes in values over time.
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APPENDIX I

ACADEMY; AUTHOR; DATE:	USMA; Butler, Houston; 1974.	USAFA; Clark & Madden; 1972.	USMA; Cross, Cortez; 1971.	Ellis, Moore; 1974
PURPOSE OF STUDY:	To compare admissions scores with attrition.	To study motivation among stayers and leavers.	To use the California Psychological Inventory to show differences between four groups of leavers and a group of high achieving freshmen.	To describe and anal of the Military Acad
SAMPLE SIZE AND CLASS YEAR:	1353 - Class of 1975.	1088 - Classes of 1970-73.	Members of the Classes of 1971-73.	Not reported.
DATE DATA COLLECTED:	September 7, 1973.	Various times.	Not reported.	1968-73.
SOURCE OF DATA:	Admissions and attrition records.	Tests administered to cadets.	California Psychological Inventory and performance and attrition data.	Interviews, records, observations.
METHOD OF ANALYSIS:	Tabular presentation of percentages with chi-square tests of significance.	Tabular presentation of means with significant differences tested for.	Tabular presentation of results with F-ratio tests of significance.	Narrative.
CONCLUSIONS:	Academic losses are predicted by several of the scores. Motivational losses are predicted by none. Overall losses are predicted by the academic ability score and the Admissions Composite score.	Stayers and leavers share similar personality qualities.	The groups showed significant differences on many of the Inventory scales.	

ACADEMY; AUTHOR; DATE:	USCGA; Enger et al; 1972.	USAFA; Grady; 1968a.	USAFA; Harger; 1971.	USMA; Hays; 1968.
PURPOSE OF STUDY:	To improve Admissions procedures to select entrants with better potential to graduate and make a career of the Coast Guard.	To determine if a combination of achievement and psychological data would reveal profile differences between stayers and lack of desire leavers.	To analyze the performance of PAE Waivers (those scoring below 400 on the Physical Aptitude Exam.	To review studies of commitment.
SAMPLE SIZE AND CLASS YEAR:	Varies (855-1391) - Classes of 1968-72.	930 - Class of 1969.	129 - Classes of 1971-75.	Various.
DATE DATA COLLECTED:	Apparently at entry.	Apparently at entrance.	At entry and later.	Various.
SOURCE OF DATA:	Admissions records and testing instruments given to cadets.	Admissions records.	Admissions and Attrition records.	
METHOD OF ANALYSIS:	Stepwise multiple regression with cross-validation.	Derivation of a "Drop Index Score" by use of multiple regression analysis.	Narrative.	Mostly narrative.
CONCLUSIONS:	The Strong Vocational Interest Blank combined with the Adjective Check list gave the best results of all test combinations.	The "Drop Index Score" is effective at predicting lack-of-desire leavers.	Compared with the average, PAE Waivers had lower leadership and physical education scores but were about the same as the average in academic performance.	Motivation for milit over a student's fou to the Academy envir structured to achiev than student motivat

Butler, Houston; 1974.	USAFA; Clark & Madden; 1972.	USMA; Cross, Cortez; 1971.	Ellis, Moore; 1974
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ber 7, 1973.	Various times.	Not reported.	1968-73.
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trong Vocational Interest combined with the Adjective list gave the best results l test combinations.	The "Drop Index Score" is effective at predicting lack-of-desire leavers.	Compared with the average, PAE Waivers had lower leadership and physical education scores but were about the same as the average in academic performance.	Motivation for military service decreases over a student's four years, due in part to the Academy environment which is structured to achieve objectives other than student motivation.

APPENDIX I

ACADEMY; AUTHOR; DATE:	Heise; 1969.	USMA: Houston; 1970.	USMA; Houston; 1973.	USMA; Houston; 1974.
PURPOSE OF STUDY:	To evaluate what kind of return the country is receiving for its investments in the academies and to evaluate the academic program at the academies.	To compare USMA Prep School graduates with the rest of the class.	To compare various admissions scores with various types of attrition.	To determine if ther ship between draft and losses.
SAMPLE SIZE AND CLASS YEAR:	Not reported.	Class of 1973.	1382 - Class of 1974.	742 - Classes of 197
DATE DATA COLLECTED:	1962-65	At entry (July 1969).	October 15, 1972.	September, 1970, an
SOURCE OF DATA:	Interviews, records, and personal observations.	American Council on Education questionnaire.	Admissions Criteria.	Attrition and Admiss
METHOD OF ANALYSIS:	Narrative.	Tabular presentation of percentages.	Tabular presentations of percentages by attrition type and score range. Significance tested.	Chi-square signific
CONCLUSIONS:		Characteristics of Prep School graduates fall between those of other cadets and freshmen at other colleges.	None of the admission scores are related to motivational losses. The cutoffs for academic and physical qualifications seem to be appropriate.	No significant diff leavers and stayers number.

ACADEMY; AUTHOR; DATE:	USMA; Houston et al; 1968-72.	USNA; Howland; 1971a.	USNA; Howland; 1971c.	USNA; Howland; 1971
PURPOSE OF STUDY:	To present various background characteristics of entering students.	To find relationships between aptitude, Quality Point Ratio, Class Standing, Graduation and the Candidate Multiple (The CEEB tests, Ranking in High School Class, Recommendations and Activities).	To see if psychological tests can be effectively utilized in predicting voluntary attrition and/or aptitude.	To determine relati tude and admissions tude and losses and ties of students wi aptitude and how th
SAMPLE SIZE AND CLASS YEAR:	7826 - Classes of 1971-76.	Class of 1970.	Classes of 1970-1973.	Classes of 1970-74.
DATE DATA COLLECTED:	Various times.	During Admissions Process.	Mostly at end of first year.	Various times.
SOURCE OF DATA:	Admissions records.	Apparently from Admissions and Class Records.	Psychological tests and admissions and attrition records.	Apparently from Adm records.
METHOD OF ANALYSIS:	Tabular presentation of results.	Multiple regression techniques to determine importance of dependent variables.	Tabular presentation of results.	Regression techniqu tation of various t
CONCLUSIONS:		Candidate multiple correlates best with academic success (especially Rank in Class and Math Achievement) Candidate multiple can also be used to predict final class standing and aptitude.	The 16PF and Cornell Word Form tests are of value in predicting voluntary loss. None of the tests are good predictors of aptitude.	Aptitude ratings be No correlation betw biographical inform tionship between lo Qualities and chara and low aptitude pe easily measured.

; 1969.	USMA: Houston; 1970.	USMA; Houston; 1973.	USMA; Houston; 1974.
aluate what kind of return the ry is receiving for its invest- in the academies and to eval- the academic program at the mies.	To compare USMA Prep School graduates with the rest of the class.	To compare various admissions scores with various types of attrition.	To determine if there was a relationship between draft lottery numbers and losses.
eported.	Class of 1973.	1382 - Class of 1974.	742 - Classes of 1972 and 1974.
65	At entry (July 1969).	October 15, 1972.	September, 1970, and 1972.
views, records, and per- observations.	American Council on Education questionnaire.	Admissions Criteria.	Attrition and Admissions Records.
tive.	Tabular presentation of percentages.	Tabular presentations of percentages by attrition type and score range. Significance tested.	Chi-square significance testing.
	Characteristics of Prep School graduates fall between those of other cadets and freshmen at other colleges.	None of the admission scores are related to motivational losses. The cutoffs for academic and physical qualifications seem to be appropriate.	No significant differences between leavers and stayers as to lottery number.
Houston et al; 1968-72.	USNA; Howland; 1971a.	USNA; Howland; 1971c.	USNA; Howland; 1971c.
resent various background cteristics of entering nts.	To find relationships between aptitude, Quality Point Ratio, Class Standing, Graduation and the Candidate Multiple (The CEEB tests, Ranking in High School Class, Recommendations and Activities).	To see if psychological tests can be effectively utilized in predicting voluntary attrition and/or aptitude.	To determine relationship between aptitude and admissions data, between aptitude and losses and to isolate qualities of students with high or low aptitude and how they can be identified.
- Classes of 1971-76.	Class of 1970.	Classes of 1970-1973.	Classes of 1970-74.
ous times.	During Admissions Process.	Mostly at end of first year.	Various times.
ssions records.	Apparently from Admissions and Class Records.	Psychological tests and admissions and attrition records.	Apparently from Admissions and Class records.
lar presentation of results.	Multiple regression techniques to determine importance of dependent variables.	Tabular presentation of results.	Regression techniques. Tabular presentation of various types of data.
	Candidate multiple correlates best with academic success (especially Rank in Class and Math Achievement) Candidate multiple can also be used to predict final class standing and aptitude.	The 16PF and Cornell Word Form tests are of value in predicting voluntary loss. None of the tests are good predictors of aptitude.	Aptitude ratings best predicted by SVIB. No correlation between aptitude and biographical information. High relationship between loss and aptitude. Qualities and characteristics of high and low aptitude personnel are not easily measured.

APPENDIX I

ACADEMY; AUTHOR; DATE:	USAFA; Hunt et al; 1969.	USMA; Ilgin et al; 1971.	USAFA; Jarrell; 1971.	USMA; Kintz; 1967.
PURPOSE OF STUDY:	To investigate the relation that various aspects of the Academy have on attrition.	Replication of USMA; Macedonia; 1969.	To survey Fourth Classmen after they had been gone for over a year.	To determine the impact mance as students of m received prior to ad
SAMPLE SIZE AND CLASS YEAR	Class of 1972.	468 - Class of 1975.	165 - Class of 1972.	573 - Class of 196
DATE DATA COLLECTED:	Not reported.	Summer, 1971.	May, 1970.	May 11, 1967.
SOURCE OF DATA:	Various.	Questionnaire, attrition records.	Questionnaire mailed to Fourth Classmen who dropped out 7/1/68 - 6/30/69.	Questionnaire, performa
METHOD OF ANALYSIS:	Various methods, mostly narrative.	Tabular presentation of results, chi-square analysis.	Tabular presentation of percentages.	Tabular presentation of
CONCLUSIONS:	To re-think the basic philosophy of the Academy and separate that which is unnecessary.	Although beliefs and attitudes did not differ between a group that had received additional information and one that had not, the "naive" group had a higher attrition rate.		Desire for additional i having misinformation h on performance. Misinf lated to change in the tary career commitment.

ACADEMY; AUTHOR; DATE:	USMA; Kraft; 1969.	USMA; Kraft; 1970.	USMA; Lauterbach, Vielhaber; 1965.	USMA; Longo; 1970.
PURPOSE OF STUDY:	To present information bearing on the effects of the five-year military obligation on Academy graduates.	To provide the background information on the sources of influence to attend USMA.	To explore views of the West Point educational environment held by the freshman and senior classes.	To compare attitudes an separating students wit successful students.
SAMPLE SIZE AND CLASS YEAR	Primarily the Classes of 1969-73.	1421 - Class of 1973.	818 - Classes of 1960 and 1963.	3766 - Classes of 1967-
DATE DATA COLLECTED:	Various times.	At entry.	March 1960, and December 1959.	Summer 1967.
SOURCE OF DATA:	Apparently a questionnaire.	Questionnaire and Admissions records.	Use of the College Characteristics Index (CCI), a standarized inventory of the collegiate environment.	Questionnaire, attritio
METHOD OF ANALYSIS:	Tabular presentation of results.	Tabular presentation of results.	Tabular presentation of average scores.	Chi-square analysis of
CONCLUSIONS:	There is not enough evidence to support or refute any particular length of service obligation.	USMA has a good image among its entering students although maybe not an accurate one. Students should decide sooner than at present to come to the Academy.	The academic atmosphere is practical, emphasizing efficiency, and usefulness.	High commitment to a mi important. More resigne decreased their desire career while at the Aca

Hunt et al; 1969.	USMA; Ilgin et al; 1971.	USAFA; Jarrell; 1971.	USMA; Kintz; 1967.
estigate the relation that s aspects of the Academy have rition.	Replication of USMA; Macedonia; 1969.	To survey Fourth Classmen after they had been gone for over a year.	To determine the impact on later performance as students of misinformation received prior to admission.
of 1972.	468 - Class of 1975.	165 - Class of 1972.	573 - Class of 1967.
ported.	Summer, 1971.	May, 1970.	May 11, 1967.
s.	Questionnaire, attrition records.	Questionnaire mailed to Fourth Classmen who dropped out 7/1/68 - 6/30/69.	Questionnaire, performance records.
s methods, mostly narrative.	Tabular presentation of results, chi-square analysis.	Tabular presentation of percentages.	Tabular presentation of results.
think the basic philosophy of demy and separate that which ecessary.	Although beliefs and attitudes did not differ between a group that had received additional information and one that had not, the "naive" group had a higher attrition rate.		Desire for additional information or having misinformation has little impact on performance. Misinformation is related to change in the degree of military career commitment.
Kraft; 1969.	USMA; Kraft; 1970.	USMA; Lauterbach, Vielhaber; 1965.	USMA; Longo; 1970.
ent information bearing on fects of the five-year obligation on Academy grad-	To provide the background information on the sources of influence to attend USMA.	To explore views of the West Point educational environment held by the freshman and senior classes.	To compare attitudes and suggestions of separating students with entering and successful students.
ly the Classes of 1969-73.	1421 - Class of 1973.	818 - Classes of 1960 and 1963.	3766 - Classes of 1967-71.
times.	At entry.	March 1960, and December 1959.	Summer 1967.
tly a questionnaire.	Questionnaire and Admissions records.	Use of the College Characteristics Index (CCI), a standarized inventory of the collegiate environment.	Questionnaire, attrition records.
presentation of results.	Tabular presentation of results.	Tabular presentation of average scores.	Chi-square analysis of differences.
s not enough evidence to or refute any particular of service obligation.	USMA has a good image among its entering students although maybe not an accurate one. Students should decide sooner than at present to come to the Academy.	The academic atmosphere is practical, emphasizing efficiency, and usefulness.	High commitment to a military career is important. More resignees than others decreased their desire for a military career while at the Academy.

APPENDIX I

ACADEMY, AUTHOR; DATE:	USMA; Macedonia; 1969.	USNA; Mann; 1973.	USMA; Marron; 1971a.	USMA; Marron; 1970
PURPOSE OF STUDY:	To test hypothesis that the congruence between expectations of how personal needs will be satisfied in an environment is positively related to adaptation in environment.	To show differences between resignees and stayers by admissions and biographical data.	To determine whether any of the Environmental-Interest Inventory scales are of value as moderator variables.	To compare end-of- Academic Board sel selectees.
SAMPLE SIZE AND CLASS YEAR:	1260 - Class of 1971.	1216 - Class of 1975.	936-1070 - Class of 1972.	1439 - Class of 19
DATE DATA COLLECTED:	Prior to entry.	At entry.	Not reported.	Not reported.
SOURCE OF DATA:	Booklet given to future cadets and various admissions criteria.	Admissions records.	E-I scales, performance, and attrition records.	Admissions, attrit records.
METHOD OF ANALYSIS:	Tabular presentation of data with chi-square tests of significance.	Narrative with averages of measures for two groups shown.	Regression analysis.	Tabular presentati significance teste square analysis.
CONCLUSIONS:	Realistic expectations about the Academy can help in the early adjustment of cadets to the Academy.	Resignees have lower high school ranks, quantitative recommendations, admissions composite. Presidential appointees less likely to resign, regular service appointees more likely to resign	One E-I scale is positively related to resignation and its predictive capacity is enhanced as another E-I scale increases.	A high academic ab better guarantee o high physical abil low academic abili greater risk than ability score.

ACADEMY; AUTHOR; DATE:	USMA; Marron; 1971c.	USMA; Marron; 1971d.	USMA; Marron; 1971e.	USMA; Marron; 1971
PURPOSE OF STUDY:	To test the hypothesis that four subgroups (on basis of athletic participation) are different than entire class regarding aptitude for service and resignation.	To develop scores to predict military aptitude, academic performance and attrition.	To validate the Academic, Leadership, and Resignation Environmental and Interest (E-I) Inventory scores.	To determine the u Military Associati Scales as regards develop a Resignat
SAMPLE SIZE AND CLASS YEAR:	Class of 1972.	652 - Class of 1968.	Classes of 1969 and 1972.	2608 - Classes of
DATE DATA COLLECTED:	During Admissions Process.	Not reported.	Not reported.	At entrance.
SOURCE OF DATA:	Admissions Criteria.	Admissions, performance, and attrition records.	E-I score results, performance and attrition records.	The scales are lis the cadet is asked ciates and likes t word with a milita
METHOD OF ANALYSIS:	Tabular presentations of predictor correlations and means for subgroups and total class.	Regression Analysis.	Regression Analysis.	Tabular presentati versus resignation
CONCLUSIONS:	Separation rate of four subgroups higher than class average. This methodology can be used for other subgroups.	Equations were developed to predict what was proposed. Further work was promised to check the validity of the equations.	E-I scores of little value for predicting academic performance, military aptitude or attrition.	The R-score is eff the potential USMA scoring above an a had much higher att than those scoring

MA; Macedonia; 1969.	USNA; Mann; 1973.	USMA; Marron; 1971a.	USMA; Marron; 1970.
test hypothesis that the congruence between expectations of how personal needs will be satisfied in an environment is positively related to adaptation in environment.	To show differences between resignees and stayers by admissions and biographical data.	To determine whether any of the Environmental-Interest Inventory scales are of value as moderator variables.	To compare end-of-first-year status of Academic Board selectees with non-selectees.
50 - Class of 1971.	1216 - Class of 1975.	936-1070 - Class of 1972.	1439 - Class of 1973.
Prior to entry.	At entry.	Not reported.	Not reported.
Booklet given to future cadets and previous admissions criteria.	Admissions records.	E-I scales, performance, and attrition records.	Admissions, attrition, and performance records.
Tabular presentation of data with Chi-square tests of significance.	Narrative with averages of measures for two groups shown.	Regression analysis.	Tabular presentation of results with significance tested by use of chi-square analysis.
Realistic expectations about the Academy can help in the early adjustment of cadets to the Academy.	Resignees have lower high school ranks, quantitative recommendations, admissions composite. Presidential appointees less likely to resign, regular service appointees more likely to resign	One E-I scale is positively related to resignation and its predictive capacity is enhanced as another E-I scale increases.	A high academic ability score is a better guarantee of success than a high physical ability score, but a low academic ability score is a greater risk than a low physical ability score.

USMA; Marron; 1971c.	USMA; Marron; 1971d.	USMA; Marron; 1971e.	USMA; Marron; 1971f.
To test the hypothesis that four subgroups (on basis of athletic participation) are different than entire class regarding aptitude for service and resignation.	To develop scores to predict military aptitude, academic performance and attrition.	To validate the Academic, Leadership, and Resignation Environmental and Interest (E-I) Inventory scores.	To determine the usefulness of the Military Association and Attitude Scales as regards attrition and develop a Resignation (R) score.
Class of 1972.	652 - Class of 1968.	Classes of 1969 and 1972.	2608 - Classes of 1972 and 1973.
During Admissions Process.	Not reported.	Not reported.	At entrance.
Admissions Criteria.	Admissions, performance, and attrition records.	E-I score results, performance and attrition records.	The scales are lists of words to which the cadet is asked the degree he associates and likes the association of the word with a military career.
Tabular presentations of predictor correlations and means for subgroups and total class.	Regression Analysis.	Regression Analysis.	Tabular presentation of R-scores versus resignation rates.
Separation rate of four subgroups higher than class average. This methodology can be used for other subgroups.	Equations were developed to predict what was proposed. Further work was promised to check the validity of the equations.	E-I scores of little value for predicting academic performance, military aptitude or attrition.	The R-score is effective at predicting the potential USMA resignee. Those scoring above an arbitrary cutoff score had much higher attrition rates (32%) than those scoring below the point (18%).

APPENDIX I

ACADEMY; AUTHOR; DATE:	USMA; Marron; 1972a.	USMA; Marron; 1972b.	USMA; Marron; 1972c.	USMA; Marron; 1973
PURPOSE OF STUDY:	To determine if socio-economic background had any effect on selection, retention, or performance of USMA officers in the Army.	To study the effect of a student's reference group(s) on his performance at the Academy.	Replication of USMA; Spencer; 1970.	To closely examine and Association Sc stand resignation more simple and va
SAMPLE SIZE AND CLASS YEAR:	3'55 - Classes of 1961-65.	612 - Class of 1975.	[illegible]7 - Class of 1975.	One half of the en
DATE DATA COLLECTED:	December 1971.	Not reported.	July 4, 1971.	Apparently at Entr
SOURCE OF DATA:	Various military records.	Questionniare, performance, and attrition records.	Survey administered to cadets.	Apparently adminis
METHOD OF ANALYSIS:	Regression analysis.	Not reported.	Tabular presentation of rankings, with a T-test used to measure significant (.05) differences.	Tabular presentati
CONCLUSIONS:	Sons of military professionals tend to be most likely to stay at West Point and in the Army. Those from middle or lower social strata perform as well as others, although more is expected of those in the lower group than of those from the military profession in order to be admitted to West Point.	The more reference groups an individual perceived as posing a threat of elimination, particularly if his primary reference group were included, the less likely would he be successful, as measured by his military aptitude ratings.	The leaver is: less interested in military, less group-oriented, more interested in athletics and academics, more influenced by family, more concerned with finances than the stayer.	An increased under resignation attitu The results do not fication of the sc scoring.

ACADEMY; AUTHOR; DATE:	USAFA; Marks; 1973.	USMA; McLaughlin; 1971a.	USMA; McLaughlin; 1971b.	USMA; Medsger; 19
PURPOSE OF STUDY:	To present opinions of academy officials on attrition.	Feasibility of a computer-assisted admission's selection system.	To investigate the validity of information from the Class Characteristics Inventory (CCIN) in terms of predicting performance; to reduce the number of measures, retaining reliability.	To learn why cadet do after they leav
SAMPLE SIZE AND CLASS YEAR:	-	Class of 1972.	1242 - Class of 1972.	117 - Class of 19
DATE DATA COLLECTED:	-	Not reported.	Sometime after June 1969.	November 1970.
SOURCE OF DATA:	-	Appears to be Admissions Records.	Admissions and first year performance records and the CCIN, an index of a student's pre-college background.	Questionnaire mai 117 were returned
METHOD OF ANALYSIS:	Narrative.	Multiple regression.	Tabular presentation of means, standard deviations and correlations with T-tests for significance.	Tabular presentati and rankings, wit
CONCLUSIONS:		The Admissions process is good at predicting academic and physical performance, but not as good at predicting aptitude for the service and retention.	Academic scholarships, academic exposure, activities, father's military career, and academic grades were all found to be positively related to retention.	The most important are lack of desire and five-year obli went to college a had some military

Marron; 1972a.	USMA; Marron; 1972b.	USMA; Marron; 1972c.	USMA; Marron; 1973a.
termine if socio-economic back- had had any effect on selection, tion, or performance of USMA ers in the Army.	To study the effect of a student's reference group(s) on his performance at the Academy.	Replication of USMA; Spencer; 1970.	To closely examine the Military Attitude and Association Scales to better understand resignation and make the scales more simple and valid.
- Classes of 1961-65.	612 - Class of 1975.	1277 - Class of 1975.	One half of the entering Class of 1969.
ber 1971.	Not reported.	July 4, 1971.	Apparently at Entrance.
us military ds.	Questionniare, performance, and attrition records.	Survey administered to cadets.	Apparently administered to cadets.
ssion analysis.	Not reported.	Tabular presentation of rankings, with a T-test used to measure significant (.05) differences.	Tabular presentation of data.
of military professionals tend most likely to stay at West and in the Army. Those from e or lower social strata per- s well as others, although is expected of those in the group than of those from the ary profession in order to be ted to West Point.	The more reference groups an individual perceived as posing a threat of elimination, particularly if his primary reference group were included, the less likely would he be successful, as measured by his military aptitude ratings.	The leaver is: less interested in military, less group-oriented, more interested in athletics and academics, more influenced by family, more concerned with finances than the stayer.	An increased understanding of cadet resignation attitudes was obtained. The results do not support a simplification of the scales in content or scoring.
; Marks; 1973.	USMA; McLaughlin; 1971a.	USMA; McLaughlin; 1971b.	USMA; Medsger; 1971a.
resent opinions of academy tials on attrition.	Feasibility of a computer-assisted admission's selection system.	To investigate the validity of information from the Class Characteristics Inventory (CCIN) in terms of predicting performance; to reduce the number of measures, retaining reliability.	To learn why cadets leave and what they do after they leave.
	Class of 1972.	1242 - Class of 1972.	117 - Class of 1971.
	Not reported.	Sometime after June 1969.	November 1970.
	Appears to be Admissions Records.	Admissions and first year performance records and the CCIN, an index of a student's pre-college background.	Questionnaire mailed to dropouts. Only 117 were returned and usable.
ative.	Multiple regression.	Tabular presentation of means, standard deviations and correlations with T-tests for significance.	Tabular presentation of percentages and rankings, with graphs.
	The Admissions process is good at predicting academic and physical performance, but not as good at predicting aptitude for the service and retention.	Academic scholarships, academic exposure, activities, father's military career, and academic grades were all found to be positively related to retention.	The most important reasons for leaving are lack of desire for military career and five-year obligation. Nearly all went to college after leaving. Many had some military experience.

APPENDIX I

ACADEMY; AUTHOR; DATE:	USMA; Medsger; 1971b.	USMA; Morgovsky; 1970.	USMA; Morgovsky; 1971.	USMA; Nadal; 1968.
PURPOSE OF STUDY:	To develop a typology for leavers and persisters.	To produce data about parents' attitudes and opinions of the USMA and their satisfaction with the information they received concerning USMA.	To examine the performance of graduates of the Military Academy Prep School (USMAPS) at the USMA.	To investigate variou students dismissed so military aptitude.
SAMPLE SIZE AND CLASS YEAR:	117 - Class of 1971.	Parents of the Class of 1974.	4530 - Classes of 1971-74.	58 - Classes of 1963-
DATE DATA COLLECTED:	November, 1970.	Fall 1970.	Not reported.	Not reported.
SOURCE OF DATA:	Questionnaire mailed to dropouts.	Questionnaire.	Admissions, attrition, and performance records.	Performance records.
METHOD OF ANALYSIS:	Various statistical analyses including stepwise descriminant analysis.	Narrative presentation of responses.	Primarily regression analysis.	Tabular presentation
CONCLUSIONS:	Reasons for leaving: student-environment discordance (22%), other career goals (22%), personal problems (19%), lack of initial motivation (10%), inability (10%), other (14%).	Although most parents were pleased with the Academy, many were unaware of various aspects of it.	USMAPS graudates performance, academically and physically, is well predicted; their leadership ability is not. USMAPS graduates have a high attrition rate, but lower than that of other prep schools.	Low physical educatio poor interpersonal sk to poor military apti
ACADEMY; AUTHOR; DATE:	USNA; Newman; 1972.		USAFA; Perry & Payne; 1970.	USMA; Piccolino; 1962
PURPOSE OF STUDY:	To describe several human factors training courses at the USNA.	To study the relation between expectation of and adjustment to cadet life.	To investigate potential differences in personality and performance variables by birth order.	To determine attriti with unusually high
SAMPLE SIZE AND CLASS YEAR:	Varied.	-	1029 - No Class specified.	1015 - Class of 1970
DATE DATA COLLECTED:	Not reported.	-	Probably at entry.	During Admissions Pr
SOURCE OF DATA:	Questionnaires.	-	Admissions entry tests and performance records.	Admissions Criteria.
METHOD OF ANALYSIS:	Narrative and tabular description of results.	-	T-test used to determine significant differences in variables between birth groups.	Tabular presentation admissions score and Significance tested.
CONCLUSIONS:		Students arrive at the Academy with inaccurate expectations which related to interpersonal dimensions correlate with early departure by resignation.	Several differences in both personality and performance variables were found among certain birth groups.	Admissions scores of ing first summer att Score and CEER score first term attrition cadets do not seem t attrition rate.

Medsger; 1971b.	USMA; Morgovsky; 1970.	USMA; Morgovsky; 1971.	USMA; Nadal; 1968.
elop a typology for leavers rsisters.	To produce data about parents' attitudes and opinions of the USMA and their satisfaction with the information they received concerning USMA.	To examine the performance of graduates of the Military Academy Prep School (USMAPS) at the USMA.	To investigate various attributes of students dismissed solely for lack of military aptitude.
Class of 1971.	Parents of the Class of 1974.	4530 - Classes of 1971-74.	58 - Classes of 1963-67.
er, 1970.	Fall 1970.	Not reported.	Not reported.
onnaire mailed to dropouts.	Questionnaire.	Admissions, attrition, and performance records.	Performance records.
s statistical analyses includ- epwise descriminant analysis.	Narrative presentation of responses.	Primarily regression analysis.	Tabular presentation of findings.
s for leaving: student- nment discordance (22%), other r goals (25%), personal pro- (19%), lack of initial moti- (10%), inability (10%), (14%).	Although most parents were pleased with the Academy, many were unaware of various aspects of it.	USMAPS graudates performance, academically and physically, is well predicted; their leadership ability is not. USMAPS graduates have a high attrition rate, but lower than that of other prep schools.	Low physical education standing and poor interpersonal skills are related to poor military aptitude.
Newman; 1972.		USAFA; Perry & Payne; 1970.	USMA; Piccolino; 1967.
scribe several human factors ing courses at the USNA.	To study the relation between expectation of and adjustment to cadet life.	To investigate potential differences in personality and performance variables by birth order.	To determine attrition levels of cadets with unusually high qualifications.
d.	-	1029 - No Class specified.	1015 - Class of 1970.
eported.	-	Probably at entry.	During Admissions Process.
ionnaires.	-	Admissions entry tests and performance records.	Admissions Criteria.
tive and tabular description sults.	-	T-test used to determine significant differences in variables between birth groups.	Tabular presentations of percentages by admissions score and cadet group. Significance tested.
	Students arrive at the Academy with inaccurate expectations which related to interpersonal dimensions correlate with early departure by resignation.	Several differences in both personality and performance variables were found among certain birth groups.	Admissions scores of no use at predicting first summer attrition. Whole Man Score and CEER score are predictors of first term attrition. High quality cadets do not seem to have higher attrition rate.

APPENDIX I

ACADEMY; AUTHOR; DATE:	USAFA; Prater et al; 1974	USNA; Priest, Houston, 1974	USAFA; Reho, Brown; 1974	Rootman; 1970.
PURPOSE OF STUDY:	To examine certain aspects of student life that tend to demotivate students or may cause them to leave the Air Force Academy.	To compare first summer expectations of this class with previous ones and to examine commitment to various groups or institutions.	To investigate the effect on attrition of a student's home geographic region, his personality, and intellectual ability.	To constuct a mode predict voluntary Coast Guard Academ
SAMPLE SIZE AND CLASS YEAR:	Apparently classes of 1974-77.	1090--class of 1977.	723--no class specified.	Class of 1972.
DATE DATA COLLECTED:	April 30, 1974.	August 28, 1973.	At entry and during the following year.	Between June 24 an
SOURCE OF DATA:	Personal observation.	Questionnaires.	Admissions scores and tests administered to those taking an introductory psychology class.	Various questionna instrumencs, and r
METHOD OF ANALYSIS:	Narrative.	Tabular presentations of percentages.	Tabular presentation of results with T-tests and F-ratios to determine significance.	Chi-square analysi between stayers an
CONCLUSIONS:			Several significant differences were found.	Various difference stayers and differ

ACADEMY;AUTHOR; DATE:	USMMA; Schwimmer; 1970.	USAFA; Sena; 1969.	USAFA; Sena, Westen; 1970.	USNA; Shields; 196
PURPOSE OF STUDY:	To determine reasons of midshipmen for coming to the academy.	To survey first summer and first semester dropouts of the class of 1971.	To determine differences between leavers and stayers on the Edwards Personal Preference Schedule (EPPS) over a two year or less period.	To show biographic 1971 and to show r attrition and admi
SAMPLE SIZE AND CLASS YEAR:	206--classes of 1969, 70, 71, 72.	82--Class of 1971.	636--Class of 1970-71.	1785--Class of 197
DATE DATA COLLECTED:	Not Reported.	Not Reported.	Various times.	Mostly during admi
SOURCE OF DATA:	Questionnaire administered to midshipmen.	Questionnaire.	Results of the EPPS and attrition data.	Apparently from ad class records.
METHOD OF ANALYSIS:	Tables of reasons by rank order.	Tabular presentation of results.	Analysis of variance and covariance.	Tabular and narrati of data.
CONCLUSIONS:	The primary reasons for coming were: financial benefits, chance to travel, prestige.		Stayers and early leavers charged over the period in a similar direction and magnitude. Late leavers changed in opposite direction, but same magnitude.	

SAFA; Prater et al; 1974	USNA; Priest, Houston, 1974	USAFA; Reho, Brown; 1974	Roetman; 1970.
o examine certain aspects of tudent life that tend to demo-ivate students or may cause em to leave the Air Force cademy.	To compare first summer expectations of this class with previous ones and to examine commitment to various groups or institutions.	To investigate the effect on attrition of a student's home geographic region, his personality, and intellectual ability.	To constuct a model to explain and predict voluntary withdrawal from the Coast Guard Academy.
pparently classes of 1974-77.	1090--class of 1977.	723--no class specified.	Class of 1972.
pril 30, 1974.	August 28, 1973.	At entry and during the following year.	Between June 24 and August 24, 1968.
ersonal observation.	Questionnaires.	Admissions scores and tests administered to those taking an introductory psychology class.	Various questionnaires, testing instruments, and records.
rrative.	Tabular presentations of percentages.	Tabular presentation of results with T-tests and F-ratios to determine significance.	Chi-square analysis of differences between stayers and leavers.
		Several significant differences were found.	Various differences were found between stayers and different types of leavers.

MA; Schwimmer; 1970.	USAFA; Sena; 1969.	USAFA; Sena, Westen; 1970.	USNA; Shields; 1967.
determine reasons of midship-n for coming to the academy.	To survey first summer and first semester dropouts of the class of 1971.	To determine differences between leavers and stayers on the Edwards Personal Preference Schedule (EPPS) over a two year or less period.	To show biographical data on class of 1971 and to show relationship between attrition and admissions scores.
6--classes of 1969, 70, 71, 72.	82--Class of 1971.	636--Class of 1970-71.	1385--Class of 1971.
t Reported.	Not Reported.	Various times.	Mostly during admissions process.
estionnaire administered to dshipmen.	Questionnaire.	Results of the EPPS and attrition data.	Apparently from admissions records and class records.
bles of reasons by rank order.	Tabular presentation of results.	Analysis of variance and covariance.	Tabular and narrative presentation of data.
e primary reasons for coming re: financial benefits, chance travel, prestige.		Stayers and early leavers charged over the period in a similar direction and magnitude. Late leavers changed in opposite direction, but same magnitude.	

APPENDIX I

ACADEMY; AUTHOR; DATE:	USAFA; Short; 1972.	USAFA; Short; 1973.	USAFA; Spence et al; 1971	USMA; Spencer; 1970.
PURPOSE OF STUDY:	To obtain opinions and information from leavers and make some analysis of answers.	To obtain opinions and information from leavers.	To see what, if any, differences in measured interests existed between cadets who dropped out and those present in January 1971.	Compare initially state expectations of enterin those who resigned dur first semester and thos
SAMPLE SIZE AND CLASS YEAR:	1127--Classes of 1969-74.	1122--Classes of 1972-76.	2537--Classes of 1972 and 1973.	1407--Class of 1973.
DATE DATA COLLECTED:	Various times.	Various times.	June or July 1968 and 1969.	July 23, 1969.
SOURCE OF DATA:	Questionnaire administered to leavers.	Questionnaire administered to leavers.	Kuder Occupational Interest Survey (Form DD).	Survey administered to
METHOD OF ANALYSIS:	Tabular presentation of percentages with analysis of trends.	Tabular presentation of percentages.	Tabular presentation of results.	Tabular presentation o T-test used to measure differences.
CONCLUSIONS:	-		No differences were found by use of the Kuder Survey.	First summer resignees academies, less in mil semester leaver is jus Stayer is outgoing; co military career.

ACADEMY; AUTHOR; DATE:	USAFA; Tebbs et al; 1973.	USAFA; Thompson; 1963.	USAFA; Thompson; 1964.	Uren; 1974.
PURPOSE OF STUDY:	To describe a program whose purpose was to assist new cadets to develop positive attitudes and behavior necessary for successful adjustments to cadet life, especially first summer.	To show biographical characteristics.	To show how lack-of-desire leavers (through December of their first year) compare with the class as a whole on various admissions indices.	To describe those asso West Point, mainly fro viewpoint.
SAMPLE SIZE AND CLASS YEAR:	1250--Class of 1976.	849--Class of 1967.	849--Class of 1967.	Not reported.
DATE DATA COLLECTED:	Not reported.	During admissions process.	During admissions process.	1970-72
SOURCE OF DATA:	Questionnaires, interviews, performance reports.	Admissions records.	Admissions records.	Interviews, records a observations.
METHOD OF ANALYSIS:	Narrative description of results.	Tabular presentation of percentages.	Tabular presentation of percentages.	Narrative.
CONCLUSIONS:	New cadets were well pleased with the program. Adjustment problems were coping with the constant physical and mental pressures, utilization of time and adjustment to the rigors of military life.		Although cutoffs on some scores would reduce LOD attrition, it would also eliminate some students who would not resign	-

A; Short; 1972.	USAFA; Short; 1973.	USAFA; Spence et al; 1971	USNA; Spencer; 1970.
btain opinions and information leavers and make some analysis nswers.	To obtain opinions and information from leavers.	To see what, if any, differences in measured interests existed between cadets who dropped out and those present in January 1971.	Compare initially stated attitudes and expectations of entering cadets among those who resigned during first summer, first semester and those who persisted.
--Classes of 1969-74.	1122--Classes of 1972-76.	2537--Classes of 1972 and 1973.	1407--Class of 1973.
ous times.	Various times.	June or July 1968 and 1969.	July 23, 1969.
tionnaire administered to ers.	Questionnaire administered to leavers.	Kuder Occupational Interest Survey (Form DD).	Survey administered to cadets.
lar presentation of present- with analysis of trends.	Tabular presentation of percentages.	Tabular presentation of results.	Tabular presentation of rankings with a T-test used to measure significance of differences.
		No differences were found by use of the Kuder Survey.	First summer resignees more interested in academics, less in military. First semester leaver is just the opposite. Stayer is outgoing; committed to military career.

FA; Tabbs et al; 1973.	USAFA; Thompson; 1963.	USAFA; Thompson; 1964.	Uren; 1974.
describe a program whose purpose to assist new cadets to develop itive attitudes and behavior ssary for successful adjustments cadet life, especially first mer.	To show biographical characteristics.	To show how lack-of-desire leavers (through December of their first year) compare with the class as a whole on various admissions indices.	To describe those associated with West Point, mainly from a psychological viewpoint.
0--Class of 1976.	849--Class of 1967.	849--Class of 1967.	Not reported.
reported.	During admissions process.	During admissions process.	1970-72
stionnaires, interviews, perfor- ce reports.	Admissions records.	Admissions records.	Interviews, records and personal observations.
rative description of results.	Tabular presentation of percentages.	Tabular presentation of percentages.	Narrative.
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APPENDIX I

ACADEMY; AUTHOR; DATE:	USAFA; 1965.	USAFA; 1966.	USCGA; 1970.	USMA; 1969.
PURPOSE OF STUDY:	To find what relation a new policy requiring resignees from the upper two classes to serve an enlisted obligation has on attrition.	To summarize findings of previous studies of attrition.	To determine differences in reasons for coming to the academy between entrants and early resignees.	To be a comprehensiv of recommendations f to the administrati
SAMPLE SIZE AND CLASS YEAR:	Not reported.	Various.	1504--Classes of 1971, 72, 73, 74.	Apparently Classes o
DATE DATA COLLECTED:	Not reported.	Various.	Not reported.	December 1968-Januar
SOURCE OF DATA:	Attrition records.		Apparently some type of questionnaire.	Apparently intervie observation.
METHOD OF ANALYSIS:	Narrative description of results.	Narrative.	Tabular presentation of percentages with differences noted (non-statistically).	Narrative.
CONCLUSIONS:	No strong conclusions about the effect of the policy on attrition could be drawn.		Entrants more career-oriented. Resignees came because of parents or just to "give it try "	

ACADEMY; AUTHOR; DATE:	USAFA; Westen; 1973a.	USAFA; Westen; 1974.	USCGA; Williams; 1973.	Beusse; 1974.
PURPOSE OF STUDY:	To show relationships between various admissions scores and various types of attrition.	To compare attrition rates of various minority groups with classes as a whole.	To determine the impact of the academy on several student attitudes and opinions.	To examine the relat draft vulnerability from the service aca
SAMPLE SIZE AND CLASS YEAR:	11100--Classes of 1968-76.	17874--Classes of 1959-77.	Class of 1970.	All students enroll academic years 1969-
DATE DATA COLLECTED:	During admissions process.	January 16, 1974.	Not reported.	Not reported
SOURCE OF DATA:	Admissions and departure data.	Attrition and admissions records.	American Council on Education SIF questionnaire administered to Fourth Classmen. Follow-up done when they became First Classmen.	Tapes supplied by ac
METHOD OF ANALYSIS:	Graphic presentation of percentages by admissions score range and attrition type.	Tabular presentation of results.	Tabular presentation of percentages, mostly narrative.	Chi-square analysis
CONCLUSIONS:			One of the conclusions is that military discipline is "increasingly difficult for today's college student to accept.	No strong tendency f students to have att proportions than tho to draft.

65.	USAFA; 1966.	USCGA; 1970.	USMMA; 1969.
hat relation a new policy resignees from the classes to serve an obligation has on .	To summarize findings of previous studies of attrition.	To determine differences in reasons for coming to the academy between entrants and early resignees.	To be a comprehensive study and list of recommendations from the students to the administration.
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ted.	Various.	Not reported.	December 1968-January 1969.
records.		Apparently some type of questionnaire.	Apparently interviews and personal observation.
description of results.	Narrative.	Tabular presentation of percentages with differences noted (non-statistically).	Narrative.
conclusions about the the policy on attrition drawn.		Entrants more career-oriented. Resignees came because of parents or just to "give it try "	
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resentation of percentdmissions score range and type.	Tabular presentation of results.	Tabular presentation of percentages, mostly narrative.	Chi-square analysis of significance.
		One of the conclusions is that military discipline is "increasingly difficult for today's college student to accept.	No strong tendency for draft-safe students to have attrited in higher proportions than those vulnerable to draft.

APPENDIX I

ACADEMY; AUTHOR; DATE:	USAFA; Grady; 1968b.	USMA; Bridges, 1970.	USMA; Butler, in process.
PURPOSE OF STUDY:	To determine if motivational resignees could be identifed by various tests given to the entire class during the first summer.	To analyze and integrate selected data from research reports by Center for Research & Development in Higher Education, Univ. of Calif.-Berkeley (SCOPE project), American Council on Education, U. S. Office of Education, & USMA in terms of possible implications for USMA.	To determine the relative s Army participants and The A invitees at USMAPS in the p the USMA, and as Army offic
SAMPLE SIZE AND CLASS YEAR:	4,519--Classes of 1968-1971.	USMA classes of 1964 and 1971-1973; national probability sample of eleventh grades in Spring 1968; national sample of entering college students in 1968 and 1969.	USMAPS and USMA classes of
DATE DATA COLLECTED:	During 1968.		
SOURCE OF DATA:	Various scores from admissions records and first summer tests.	SCOPE, ACE, USOE, and USMA data banks.	Tables and T-tests.
METHOD OF ANALYSIS:	T-tests and point-biserial correlations.	T-tests, chi squares, percentages.	Tables and t-ratios.
CONCLUSIONS:	Academic achievement, personality, and attitudinal data may be related to motivational losses.	Meaningful differences in attitudes, values, aspirations, etc., exist between students from different geographical regions.	TAG invitees are generally

ACADEMY; AUTHOR; DATE:	USMA; Sloane, 1970.	USMA; Wise, 1968.
PURPOSE OF STUDY:	To review research on the relationship between physical aptitude examination scores and attrition.	To determine the relative success of The Adjutant General invitees and Active Army attendees of the Military Academy Preparatory School while at the USMA.
SAMPLE SIZE AND CLASS YEAR:	Classes of 1951-1969.	USMAPS and USMA class of 1970 and 1971.
DATA DATA COLLECTED:		
SOURCE OF DATA:	Admissions records.	Admissions records.
METHOD OF ANALYSIS:	Charts.	Tables
CONCLUSIONS:	Early studies showed consistent tendency for those scoring in bottom 7 percent on PAE to be more likely to leave; tendency is less strong in recent years.	TAG invitees are much more successful.

AFA; Grady; 1968b.	USMA; Bridges, 1970.	USMA; Butler, in process.
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519--Classes of 1968-1971.	USMA classes of 1964 and 1971-1973; national probability sample of eleventh grades in Spring 1968; national sample of entering college students in 1968 and 1969.	USMAPS and USMA classes of 1971-1974.
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APPENDIX I

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